JULY 11, 1936

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. II., OF VOL. II., 1936. LONDON, SATURDAY, JULY 11, 1936. Pp. 112. Price 1s.
No. 5889. VOL. CCXXXI. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Inland £2 8s. Abroad £2 10s. Annual Subscription:

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 3

THE HYGIENE OF THE CHANGE IN WOMEN
(The Climacteric)
By ISABEL EMSLIE HUTTON, M.D.
(Author of "The Hygiene of Marriage")
Crown 8vo. 5s. net.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

THE CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.
Vols. I and II. Price 10s. 6d. each. Postage extra.
Volume I.—"Each of the 45 Sections included in the book is contributed by an experienced worker. . . ."
Volume II.—"We may say that the success of the first volume is here repeated. . . ."—BRITISH MEDICAL JOURNAL.
"Physicians and surgeons cannot afford to omit the knowledge here outlined. . . ."—BIRMINGHAM MEDICAL REVIEW.
London: THE LANCET LTD., 7, Adam-street, Adelphi, W.C.2.

SECOND EDITION.
UROLOGY IN WOMEN:
A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.
By E. CATHERINE LEWIS, M.S. (Lond.), F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital; Surgeon and Urologist to the South London Hospital for Women.
¶ "*This book should certainly make and keep for itself a place in urological literature.*"—LANCET.
Pp. viii + 100. With 4 Coloured Plates and 27 other Illustrations. Price 6s.; postage 5d.; abroad 9d.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

OESOPHAGEAL OBSTRUCTION:
ITS PATHOLOGY, DIAGNOSIS AND TREATMENT
(including four chapters on Cancer of the Œsophagus).
By A. LAWRENCE ABEL, M.S. Lond., F.R.C.S. Eng., Assistant Surgeon to the Cancer Hospital, &c.
Pp. 245. 132 Illustrations. 2 Col. Plates. 30s. net.
"Masterful and complete. . . Cannot be too highly praised."
—SURG. GYN. AND OBSTET. JOUR.
Oxford University Press, Amen House, London, E.C.4.

2nd Ed., fully revised, in 1 Vol., 854 pp. 811 Illus.
EMERGENCY SURGERY. 50s. net; postage 8d.
By HAMILTON BAILEY, F.R.C.S.
BRISTOL: JOHN WRIGHT & SONS LTD. LONDON: SIMPKIN.

FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B. (EDIN.).
With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S.
Pp. 550. 337 X ray photographs, photographs and diagrams. 24s. net.
Constable & Co. Ltd., London.

Demy 8vo. Pp. x + 258. 12s. 6d. net, postage 6d.
THE NATURE AND TREATMENT OF
ASTHMA, HAY FEVER AND MIGRAINE.
With Clinical Studies on Pyrogenic Therapy, Oxygen Want, Bronchitis, Pneumonia, Phthisis, Renal Disease, etc.
By A. G. AULD, M.D.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

NOW READY. SECOND EDITION.
DISEASES OF THE RECTUM AND COLON
AND THEIR SURGICAL TREATMENT.
BY
J. P. LOCKHART-MUMMERY,
F.R.C.S. ENG., M.A., M.B., B.C. CANTAB.,
Emeritus Surgeon to St. Mark's Hospital.
Pp. viii + 616, with 247 Illustrations. Price 35s.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. 42 3s. net.
"No praise is too high for the author of this great book. It must be considered as the standard work on thyroid disease. Its pages summarise all that is known of this most interesting subject at the present day."—WEST LONDON MEDICAL JOURNAL.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

AURAL THERAPY IN RELATION TO DEAFNESS. By
Prof. D. F. FRASER-HARRIS, M.D., D.SC., B.SC. (LOND.), F.R.S.E.
Foreword by SIR JAMES PURVES-STEWART, K.C.M.G., C.B., M.D. (Consulting Physician to the Westminster Hospital), who says: "I cordially commend this excellent study to the attention of medical colleagues, so that they may prescribe for their deaf patients suitable and efficient corrective apparatus for individual auditory defects."
7/6 Post free.
THE STERLING MEDICAL PUBLISHING CO.,
81/3, Knightrider-street, London, E.C.4.

FOURTH EDITION. Completely revised. 10s. 6d. net.
TREATMENT OF DISEASES OF THE SKIN.
By KNOWSLEY SIBLEY, M.A., M.D., B.Ch. (Camb.)
London: Edward Arnold & Co., 41 and 43, Maddox-street, W.1.

MOTIVES AND MECHANISMS OF THE MIND
By E. GRAHAM HOWE, M.B., B.S.
Pp. 280. Demy 8vo. 10s. 6d. net.
FIRST VOLUME OF THE POST-GRADUATE SERIES.
London: THE LANCET LTD., 7, Adam-street, Adelphi, W.C.2.

H. K. LEWIS & Co. Ltd., MEDICAL PUBLISHERS AND BOOKSELLERS
Textbooks and Works in Medical, Surgical and General Science of all Publishers.
Orders by Post or Telephone promptly attended to. FOREIGN BOOKS Catalogues post free on Application.
Estimates given for binding. Sets of Periodicals bound to order.
Books advertised or reviewed in this Journal can be supplied to order.
Medical Stationery, Loose-Leaf Case Books, Card Index Systems, Filing Cabinets, Name Plates in Bronze or Brass, etc. Hand-painted Shields of the Arms of Universities, Hospitals and Colleges.
Department for SECOND-HAND BOOKS, 140 Gower Street. Telephone: Museum 4031.
MEDICAL AND SCIENTIFIC LENDING LIBRARY
Annual Subscription, Town or Country, from One Guinea. *Prospectus on application.*
LIBRARY READING ROOM (first floor) OPEN DAILY TO SUBSCRIBERS. Hours 9 a.m. to 6 p.m. Saturdays to 1 p.m.
136 GOWER STREET, LONDON, W.C.1
Telegrams: "PUBLICAVIT, WESTCENT, LONDON." Telephone: MUSEUM 7756 (3 lines).

CALSOMA

A new, especially palatable effervescent salt which is a rational gastric antacid for regular relief from gastric distress. The essential components of Calsoma are buffer salts, the tri-basic phosphates of calcium and magnesium. These salts neutralise excessive acidity but never produce gastric alkalinity nor alkalosis. Calsoma relieves heartburn and acid indigestion; also the pain of gastric and duodenal ulcer without injuring the kidneys, or causing constipation. Calsoma may be prescribed for use over long periods with safety and your patients will not readily tire of it.

Write for literature and samples to:

ABBOTT LABORATORIES LTD., 52a Wigmore St., London, W.1

ELIXIR

Bromo - Valerianate

GABAIL

exerts a profound influence on the exhausting sweatings and flushings, the nervous irritation and depression, mental excitability, restlessness, and 'anxiety neuroses' associated with the

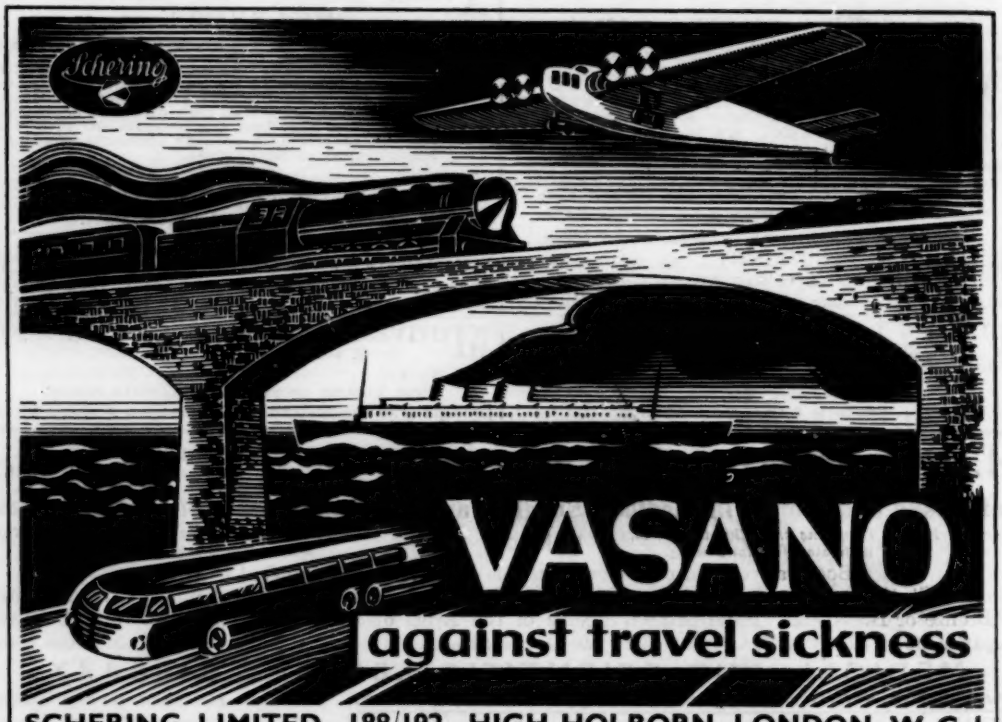
MENOPAUSE

Dose: One tablespoonful twice or thrice daily.

Supplied in bottles of 187 c.c.

Literature and Samples on request from:—

THE ANGLO-FRENCH DRUG CO. LTD.
11 & 12, Guilford Street, LONDON, W.C.1



SCHERING LIMITED, 188/192, HIGH HOLBORN, LONDON W.C.1

JULY 11, 1936

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5889 LONDON, SATURDAY, JULY 11, 1936 CCXXXI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Industrial Pulmonary Disease due to the Inhalation of Dust. By E. L. MIDDLETON, M.D.—II. 59

Ætiology of Lymphadenoma: Sensitised Vaccine of the Elementary Bodies. By M. H. GORDON, D.M., F.R.S... 65

Acute Alimentary Catarrh in the Newborn. By W. S. CRAIG, M.R.C.P.—(*With chart*) 68

Pernicious Anæmia followed by Carcinoma of the Stomach. By S. SILVERMAN, M.D.—(*With chart*)..... 71

Adenocarcinoma of the Stomach and Hyperchromic Anæmia. By N. G. HUIBERT, M.B... 74

Resection of the Lower Œsophagus and Cardia. By E. G. MUIR, F.R.C.S.—(*Illustrated*)..... 75

MEDICAL SOCIETIES

Royal College of Surgeons of England and the Académie de Chirurgie, Paris: Fractures of the Neck of the Femur—Research on Surgical Problems..... 77

Institute of Child Psychology: Neurosis in the Child 79

Royal Medico-Psychological Association: Manic-depressive Psychoses—Annual Dinner 80

REVIEWS AND NOTICES OF BOOKS

British Encyclopædia of Medical Practice. Edited by Sir Humphry Rolleston, M.D. 83

Vascular Disorders of the Limbs. By Sir Thomas Lewis, F.R.C.P., F.R.S. 83

The Anæmias. By Janet M. Vaughan, M.R.C.P. With notes by H. M. Turnbull, F.R.C.P. 84

Tropical Medical Manual. By P. E. Turner, M.D... 84

British Journal of Children's Diseases 84

LEADING ARTICLES

INFANTILE DIARRHŒA IN HOSPITAL 85

SQUINT 86

THE OXFORD MEETING.... 86

ANNOTATIONS

A Year's Crime 88

Ex-Services Welfare Society 87

Chemistry of Red Blood-cells 88

Mechanistic Biology 88

The Food of the World.... 89

Dr. Panis's Resuscitator .. 89

Infectious Disease in 1936 . 90

Medicine Stamp Duty Leakage 90

A Surgical Catalyst..... 91

Staphylococcus Infection at a Maternity Home..... 91

PROGNOSIS

CVII.—Prognosis in Hay-fever. By JOHN FREEMAN, D.M. 92

GRAINS AND SCRUPLES

From a West-country Practitioner 99

PUBLIC HEALTH

Future of the Isolation Hospital 100

Infectious Disease in England and Wales.... 101

THE SERVICES

Royal Naval Medical Service—Royal Army Medical Corps—Royal Air Force—Indian Medical Service—Colonial Medical Service 101

OBITUARY

Thomas William Pelham Lawrence, F.R.C.S.—(*With portrait*) 103

SPECIAL ARTICLES

Conference on War Stress and Some of its Sequels: Delinquency 93

Medicine and the Law: Penal Servitude for Illegal Operation—Expert Evidence "Objectionable" 95

Paris: Barbiturate Poisoning — Horticulturally Minded Doctors..... 96

Vienna: Austrian Oto-Rhino-Laryngologists in Graz—Prof. Ludwig Braun 97

Scotland: Prevention of Disease — Education of Deaf and Dumb Children 97

Ireland: Proposed Radiological Institute for Dublin—Prosecutions Under the Criminal Law Amendment Act 98

The Medical Art Society: Second Annual Exhibition 102

The Medical College of St. Bartholomew's Hospital.—(*Illustrated*) 104

London University Celebrations: London (R.F.H.) School of Medicine for Women—St. Mary's Hospital Medical School 105

PARLIAMENT

The Midwives Bill on Report 109

Pedestrian Safety 109

Notes on Current Topics: Sale of Medicines on Sundays—The Public Health (London) Bill... 109

Question Time: Young Persons and National Health Insurance—Maternity and Child Welfare—Unemployment Benefit—Medical Reports on Prison Dietary—Special Schools for the Deaf — Overcrowding at Liverpool Mental Hospital—Third-party and Workmen's Compensation Insurance—Rating of Shops in Hospitals 109

CORRESPONDENCE

Treatment of Phlebitis in Varicose Veins (Mr. R. T. Payne, F.R.C.S.) 106

Gold in the Treatment of Intestinal Tuberculosis (Dr. Y. G. Shrikhande) .. 106

The Efficacy of Various Sources of Heat Used in Treatment (Sir Leonard Hill, M.B., F.R.S.)..... 106

Prontosil in Streptococcal Infections (Messrs. Bayer Products Ltd.) 107

MEDICAL NEWS

University of Cambridge .. 107

University of Manchester . 107

University of Liverpool ... 107

University of Birmingham 107

University of Aberdeen ... 108

Royal College of Surgeons of England 91

Queen's University, Belfast 108

Medical Travelling Fellowships 108

Berlin During the Olympiad 108

Stockport Infirmary 108

International Conference on Fever Therapy..... 108

Congress of Plastic Surgery 108

Conference on Social Work 108

New Health Centres at Liverpool 108

Winford Orthopædic Hospital 108

King Edward's Hospital Fund 87

Plaistow Maternity Hospital..... 98

Victoria Hospital, Blackburn 98

NOTES, COMMENTS, AND ABSTRACTS

The Canadian Eskimo.... 112

Hospital Almoning as a Career 112

An Investigation into Periodic Paralysis..... 113

Eugenic Problems Simplified 113

A Gymnasium Handbook . 114

Hints to Mothers..... 114

Corn 114

Medical Diary 108

Appointments 110

Vacancies 111

Births, Marriages, Deaths 114

JOHN BALE, SONS & DANIELSSON, LTD.

ROLLING HOME. By "THE IDLER" (Surg.-Comdr. A. G. BEE, R.N., F.R.G.S.). Post free 9s.

"His recollections of an exceptionally varied and interesting life, which has taken him into a number of odd and little-known parts of the world, are very well worth the reading, and even his lapses into discursiveness are amusing enough to be forgivable. Altogether this is an informal, companionable sort of book."—TIMES LITERARY SUPPLEMENT.

ROUND ABOUT HARLEY STREET: The Story of Some Famous Streets. By C. P. BRYAN, M.B., B.Ch., B.A.O. Post free 5s. 6d.

"A happy blend of humour and learning. Will be a lasting delight to all interested in medicine."—BRIT. JNL. OF PHYSICAL MEDICINE.

MODERN BIRTH CONTROL METHODS or How to Avoid Pregnancy. By G. RYLEY SCOTT, F.Ph.S.(Eng.). With a Foreword by Sir W. ARBUTHNOT LANE, Bart., C.B. Post free 8s.

"We can thoroughly recommend this little book. . . It is written with considerable knowledge and much skill."—MEDICAL WORLD.

DIPHTHERIA, PAST AND PRESENT. Its Ætiology, Distribution, Transmission, and Prevention. By J. GRAHAM FORBES, M.D., F.R.C.P., D.P.H., Principal Assistant Medical Officer, L.C.C. Introductory Note by Sir FREDERICK ANDREWES, M.D., F.R.S. Post free 46s. net.

"It should be in the hands of every Medical Officer of Health."—PUBLIC HEALTH.

ENURESIS OR BED-WETTING. By J. R. BATTY, M.D., B.Sc., D.P.H. Post free 3s. 9d.

"Its useful advice should be taken by all practitioners who are daily having to deal with this troublesome condition."—BRITISH MEDICAL JOURNAL.

THE IMMUNOLOGY OF PARASITIC INFECTIONS. By WILLIAM H. TALIAFERRO, Ph.D., Professor of Parasitology, University of Chicago. Illustrated. Post free inland 25s. 9d. net; abroad 26s. 6d.

"An important contribution to medical literature."—LANCET.

83-91, GREAT TITCHFIELD ST., LONDON, W.1

A Perfect Method of Local Medication for Women

PONTAMPON

Registered Trade Mark

Pond's Medicated Vaginal Tampons

Continuous Local Application

As a means of applying local treatment in **Gonorrhœa, Endometritis, Cervicitis, Vaginitis, Leucorrhœa, Dysmenorrhœa, Prolapsus Uteri, etc., Pontampon** presents the most **Simple** and **Satisfactory** method.

Issued in three sizes, small, medium, and large
(*Various medications.*)

THE PONTAMPON CO.
(V. A. Blenkinsop)
55 Holborn Viaduct, LONDON, E.C.1.

A standard preparation of tried therapeutic value

KASENA

(Squire's Vegetable Laxative)

A Pleasant and Non-griping Aperient

Invaluable in habitual constipation and particularly suitable for elderly and delicate persons

In bottles - 1/9, 3/- and 5/6
Postage 6d. extra.

SQUIRE & SONS, LTD.
Chemists to the King
LONDON
Or from your own Chemist

STUTTERING

SPEECH DEFECTS
RESIDENT AND NON-RESIDENT PUPILS.
Full Particulars upon request to:
Mr. A. C. SCHNELLE,
119, Bedford Court Mansions,
London, W.C.1
MUSEUM 3665. Estab. 1905.

STAMMERING, SPEECH DEFECTS.

BEHNKE METHOD. Estab. 1880. CASES, non-resident, treated at 39, Earl's Court-square, S.W.5, and, in residence, in the Summer Holidays at Miss Behnke's house on the Chilterns.

"Pre-eminent success in the education and treatment of stammering and other speech defects."—*The Times.*

"Thoroughly physiological principles."—*The Lancet.*

"The method is scientifically correct and perfectly effective."—*Guy's Hospital Gazette.*

"STAMMERING, CLEFT PALATE, SPEECH LISPING." 3s. 9d.
of Miss BEHNKE, 39, Earl's Court-square, S.W.5.

PROBLEMS OF

ANAESTHESIA

in GENERAL PRACTICE

BY

D. H. LUKIS, M.D., B.S. LOND.

LATE HON. ANÆSTHETIST, S. LONDON HOSPITAL; LATE CLINICAL ASSISTANT, EAR, NOSE, AND THROAT DEPARTMENT, QUEEN'S HOSPITAL FOR CHILDREN, AND HON. MEDICAL OFFICER, KINGSTON VICTORIA HOSPITAL

CHAPTERS

1. GENERAL CONSIDERATIONS
2. THE ESTIMATION OF ANÆSTHETIC RISKS
3. WHEN TO CALL IN A SPECIALISED ANÆSTHETIST
4. ANÆSTHETIC RISKS IN THE INDIVIDUAL
5. CHOICE OF AN ANÆSTHETIC: INHALATIONAL METHODS
6. CHOICE OF AN ANÆSTHETIC: INHALATIONAL METHODS (*contd.*)
7. CHOICE OF AN ANÆSTHETIC: INHALATIONAL METHODS (*contd.*)
8. CHOICE OF AN ANÆSTHETIC: NON-INHALATIONAL GENERAL ANÆSTHESIA
9. THE ANÆSTHETIC PROBLEM IN SPECIAL OPERATIONS
10. PROBLEMS OF PREPARATION
11. PROBLEMS OF ADMINISTRATION
12. IMPROVISATIONS AND SUBSTITUTES
13. POST-ANÆSTHETIC PROBLEMS

AN ESSAY AWARDED THE SIR CHARLES HASTINGS PRIZE OF THE BRITISH MEDICAL ASSOCIATION, 1934

Demy 8vo **7/6 net (postage extra)** 158 + vi pages

HODDER & STOUGHTON, LTD., *Medical Publications*, Warwick Square, E.C.4

ADDRESSES AND ORIGINAL ARTICLES

INDUSTRIAL PULMONARY DISEASE DUE TO THE INHALATION OF DUST

WITH SPECIAL REFERENCE TO SILICOSIS *

BY E. L. MIDDLETON, M.D. Edin., D.P.H.
H.M. MEDICAL INSPECTOR OF FACTORIES

IN the first lecture the characteristics of the disease known as silicosis were outlined, and it was pointed out that the essential lesion is the fibrous nodule. Certain of the occupations in which the disease occurs were referred to, and it was found they involved exposure to dust of free silica, as flint or quartz. In some occupations free silica was the only important constituent of the dust; in others it was mixed with other dusts, and in the case of granite, which contains large and variable proportions of silicates, there appeared a tendency to the formation of a linear or diffuse type of fibrosis. This type of fibrosis was seen in the radiogram of a sagger-maker, in the pottery industry. The man was 65 years of age and had been employed in sagger-making for 53 years, and he would be exposed to dust of fireclay at his work. A radiogram taken five years later showed some increase of the shadows but no evidence of nodulation.

We may now pass on to the consideration of some industrial processes in which the workers are exposed to dust of silicates, that is, chemically combined silica. From the point of view of health by far the most important of the silicates is asbestos.

Asbestos

Asbestos is a commercial term applied to a group of minerals possessing the common property of finely fibrous structure. The most important varieties are chrysotile, a silicate of magnesium with little iron, crocidolite and amosite, silicates of iron with smaller amounts of magnesium. In typical samples of asbestos the fibres can be separated to an extreme degree of fineness, while retaining considerable length; this property renders the material capable of being carded, spun into yarn, and woven into cloth.

The asbestos is usually received in this country, chiefly from Canada, Russia, Italy, Rhodesia, and the Cape Province, in the crude form consisting of the crushed rock, and the subsequent processes in its manufacture include disintegrating and opening the fibre, carding, spinning, and weaving the textile materials, or grinding and mixing with other substances in the manufacture of insulating slabs and compounds, cement sheets, and a great number of other articles used in many industries.

The dust given off from asbestos in processes of manufacture consists of fragments of fibres and small particles of rounded or angular shape. The following counts were made by Watson from samples taken in a factory where three varieties of asbestos were being used (see Table).

The median sizes of *particles* in five counts varied between 0·46 μ and 0·8 μ diameter, and the percentage distribution of sizes was 32 to 54 per cent. less than 0·5 μ and 96·6 to 99·9 per cent. less than 5 μ diameter.

The median length of the *fibres* in five counts was between 2·65 μ and 3·5 μ, and the percentage distribution of lengths of fibres was 8 to 16 less than 1 μ, and 87 to 92 less than 10 μ.

The distribution of diameter, size, or thickness of *fibres* in one sample was: median diameter 0·56 μ, 5 per cent. less than 0·2 μ, 43 per cent. less than 0·5 μ 98 per cent. less than 2 μ.

The modern development of the industry has a comparatively short history. The history of the disease asbestosis is correspondingly short. The first recorded case was described by Dr. Montague Murray.[75] It was a man employed 13 or 14 years in the industry, the first 10 years in the card-room, and he was the last survivor of 10 workers in that room. That was in 1899. The diagnosis was verified by Dr. Murray after post-mortem examination. Sections of the lungs made about 1925, from this case, show "asbestosis bodies." Fahr [76] described a case of asbestosis in 1914. Merewether [77] records the few cases published in the literature between that time and 1924, when Cooke [78] described a case which has been followed by an incidence of several in each successive year.

—	Process.	Asbestos.	Position.	Particles. (In 1 c.cm.)	Fibres. (In 1 c.cm.)	Total.*
1	Carding.	White.	B.L.	235	180	415 (12)
2	,,	,,	G.A.	120	95	215 (6)
3	Doubling.	Blue.	G.A.	105	95	200 (6)
4	Spinning.	,,	G.A.	115	120	335 (9)
5	Weaving (cloth).	White.	B.L.	240	85	325 (9)
6	,,	,,	G.A.	55	40	95 (3)
7	Weaving (brake-lining).	,,	B.L.	140	70	210 (6)
8	,,	,,	G.A.	130	55	185 (5)
9	Winding.	Blue.	B.L.	200	240	440 (13)
10	Plaiting.	White.	B.L.	120	50	170 (5)
11	,,	,,	G.A.	120	85	205 (6)
12	Mattress making.	Blue.	B.L.	405	820	1225 (35)
13	,,	Various.	G.A.	35	25	60 (2)
14	Bagging.	Amosite.	G.A.	210	210	420 (12)
15	Disintegrating.	,,	G.A.	190	260	450 (13)
16	Making sections.	,,	B.L.	690	1630	2320 (66)
17	,,	,,	G.A.	150	170	320 (9)
18	Pipe making.	Blue.	B.L.	90	190	280 (8)
19	,,	Amosite.	B.L.	110	215	325 (9)
20	,,	,,	G.A.	80	135	215 (6)

B.L. = breathing level of worker; G.A. = general air of the room.

* The figures in parentheses represent the number of millions of particles in a cubic foot of air. (See Lecture I., p. 2.)

During the last ten years an extensive literature has been produced on this subject, and it will suffice for the present purpose to mention briefly some of the features in which this disease differs from silicosis.

Clinically, the signs of asbestosis are slight in the early stages. The striking symptom is dyspnœa of gradually increasing intensity as the disease progresses. The radiographic appearance is typically that of a fine type of fibrosis of the lungs occupying the whole of both lung fields, and more dense at the bases. The individual shadows are minute, lobulated, superimposed but not tending to form massive coalescence, and the lung fields present a veiled or ground-glass appearance. A characteristic feature is the "shaggy" outline of the heart shadow. The nodular shadows seen in silicosis are not present in uncomplicated asbestosis.

Post mortem the appearance of the lungs is quite unlike that in silicosis. Pleural adhesions are usually extensive and dense, but the surface of the pleura shows no nodulation and nodules are not seen or felt on the cut surface of the lung. The consistence of the whole lung is increased, and large areas may show fibrous condensation, which is tough rather than hard as in silicosis. Parts of the lung least affected by the fibrotic change are often congested

* The Milroy Lectures for 1936 delivered before the Royal College of Physicians of London on Feb. 27th and March 3rd. The first lecture appeared in THE LANCET last week.

or pneumonic. Emphysema is notably localised in areas and bullous in form, usually at the anterior and lower margins, and at the extreme apices a honeycomb-like patch of emphysematous bullæ may be seen. A partial pneumothorax is present in some cases.

Histological examination of the lung reveals the most characteristic features of the disease. There is generalised fibrosis and the alveolar walls show diffuse thickening.[79] Everywhere in the pulmonary tissue are to be seen fibres of apparently unaltered asbestos, isolated and in clumps, and the "asbestosis bodies" so well described by Gloyne [80] and Beger.[81]

Asbestosis bodies have been found in the sputum by Stewart and Haddow,[82] Simson and Strachan,[83] Page,[84] and others and by exploratory lung puncture (first suggested by S. A. Henry). The presence of asbestosis bodies in the fæces was described by Gloyne.[85]

In the five-year period, 1930–34, a total of 50 deaths were certified in which asbestosis is mentioned as a cause of death. In addition 4 deaths must be added in which asbestosis was known to be the cause of death, although it is not mentioned on the certificates. These 54 cases occurred in the five consecutive years in the following numbers: 8, 9, 7, 15, and 15. There is therefore no evidence of diminution in numbers.

Of the 54 deaths 31 were females and 23 were males. The average age of the females was 32·6 years and of the males 46·7 years. The seasonal incidence was irregular, being highest in January and October, with 8 each; next in order are February and June with 6 each; March, August, and December with 5 each; May with 4; April, July, and September with 2 each; and November with 1. In 13 cases asbestosis was given as the only cause of death: 8 females, 5 males. In 24 cases tuberculosis was also present (44·4 per cent.): 16 females and 8 males. Broncho-pneumonia was present in 6 cases (11 per cent.): 4 females and 2 males; cardiac disease or cardiac failure in 4 cases: 1 female and 3 males; cancer of the lung in 3 cases: 2 females and 1 male; lobar pneumonia in 2: both males; and bronchitis and nephritis, 1 each: both males. In 43 deaths from asbestosis in the four years from June, 1931, to June, 1935, the periods of employment in the industry ranged from 10 months in distintegrating, to 23 years on weaving; the average duration of employment for the 43 fatal cases was just under 10½ years.

The relationship between asbestosis and tuberculosis has been discussed by Merewether [86] and has been commented on by numerous writers. The general experience is that tuberculosis is by no means an infrequent accompaniment of asbestosis, while the opinion is general that it is less frequent than with silicosis. In the present series of 54 fatal cases of asbestosis, tuberculosis was present in 24 (44·4 per cent.). In a series of 67 fatal cases collected by the Factory Department [87] the number with tuberculosis is 26 (38·8 per cent.). In 100 cases collected by Burton Wood and Gloyne [88] there were 21 (21 per cent.) with tuberculosis. Only 26 of their series were fatal, and, in view of the higher proportion found with tuberculosis in the fatal groups, it may be that active tuberculosis is more frequent as a terminal complication than as a concomitant disease during earlier stages.

The difference in the reaction of the tissues to silica and asbestos has been demonstrated by experiment. Guinea-pig experiments made by Gloyne [89] with asbestos showed that injection of the dust was not followed by an acute inflammatory reaction; a similar observation was made by Policard.[90] Gardner and Cummings [91] found that asbestos was concentrated in the respiratory bronchioles and their lateral alveoli, and fibrosis was first manifested after 500 days' exposure. Quartz, on the other hand, penetrated to the terminal alveoli of the lung, was rapidly concentrated by migrating phagocytes in the pulmonary and mediastinal lymphoid tissues, and provoked an early and rapid multiplication of fibroblasts. The German workers quoted by Gloyne [92] suggested that the silicate is broken down into silica in the tissues. Beger and Giese took a similar view and explained the slower action of silicates compared with free silica in that way. Koppenhöfer [93] points out that the magnesium and iron are dissolved out and are replaced by alkalis which combine with the silica. The silica then undergoes solution. Fowweather [94] records the result of chemical analysis of the lungs in a fatal case of asbestosis, in which the amount of ash, in excess of what would be present in normal lungs, was wholly accounted for as silica. He drew the tentative conclusion that the asbestos had undergone decomposition in the lung with deposition of SiO_2 and removal of the metallic oxides.

Sillimanite

This is anhydrous aluminium silicate, with the formula Al_2SiO_5. It occurs as rock of great density, imported from India, and it is used as a refractory material. The broken surface shows masses of prismatic crystals in the form of fibres, which do not appear to be capable of division into extremely fine fibres like asbestos, but they tend to fracture and, when crushed, to be reduced to powder. The processes of manufacture include crushing, grinding, and sieving the rock, usually after it has been calcined, and considerable quantities of dust are given off. The results of exposure to the dust of sillimanite are of special interest, because of the fibrous form of the mineral, in which it resembles asbestos. Few persons are employed in the industry at present.

At a factory where 15 men are employed, 13 of the workers were examined clinically and radiologically, and a complete occupational history was taken, with the assistance of my colleague Dr. Henry, and the coöperation of the employers. None of the workers had any previous exposure in a dusty occupation. The ages ranged from 24 to 50 years, and the duration of employment in the industry from 1½ to 16 years. From examination of the 13 radiograms it was evident that no striking changes had occurred in the lungs of the men examined. In 4, employed respectively 16, 11, 7, and 5 years, there was some slight change which might be due to dust. This was not supported by clinical evidence, except that in the first there was slight bronchial catarrh. In 3 others, slight changes found might have been due to antecedent disease. In all the others hilum shadows were increased in extent or density, and in 4 of them there were also increase of the linear shadows and of the pulmonary reticulum.

The numbers are too small to support any final conclusion, but within the limits of the material of the investigation it does not appear that dust of sillimanite is highly injurious. It cannot be said, however, that injury to health would not be caused by longer exposure, or that it might not become apparent after a lapse of time from the period of exposure.

China-clay

China-clay, or kaolin, is hydrated silicate of aluminium, $H_4Al_2Si_2O_9$. It is formed by the decomposition of felspar, by the removal from it of silicate of potassium through the action of water containing carbon dioxide. The largest production of china-clay in the world is in Cornwall, where it occurs in deep pits from which it is washed with water under pressure. There is exposure to dust in shovelling the clay after it has been dried in the kilns.

China-clay is an important ingredient in china and earthenware pottery, and it is used in the manufacture of paper, cotton-cloth, paint, soap, and a large number of other commodities.

There are no satisfactory data regarding the effects of china-clay on the human lungs, but amongst both workers and management, engaged in the industry in Cornwall, there is a general belief that no injury to health follows exposure to the dust and that respiratory disease is not unusually prevalent.

Dr. Chown, late medical superintendent of the sanatorium at Tehidy, kindly let me see X ray films of 4 clay-workers. Two of them showed tuberculosis only. A radiogram from a third man, aged 37, in whom there were no conclusive signs of tuberculosis, showed only increase of hilum, linear, and reticular shadows. The fourth radiogram of a man, aged 49, with no definite signs of tuberculosis, showed the whole of both lung fields covered with extremely fine mottling, most marked in the middle zones and at the right base. The film suggests a pneumoconiosis, not of silicotic type. Later, Dr. Chown sent me a radiogram of another clay-worker, aged 40, employed for 19 years in the "dry" or kiln, where he would be exposed to dust of china-clay. He had tuberculosis with tubercle bacilli in the sputum. The radiogram shows evidence of mottling of silicotic type.

These radiological appearances recall the results of animal experiments obtained by Kettle,[95] in which china-clay alone produced only cellular reaction with the formation of plaques of dust and cells in the alveoli, while china-clay with dead tubercle bacilli caused the formation of fibrotic tissue in the form of the silicotic nodule.

Siegmund [96] has suggested that a tuberculous process may influence the changes which occur in mineral substances in the tissues.

Talc and French Chalk

In its compact form the mineral talc is known as steatite or soapstone. It is a hydrated magnesium silicate $H_2Mg_3Si_4O_{12}$. In powder form it is used as a filler for paper, soaps, and paints, and for leather dressing, and as a lubricant. It is also used in making electric switchboards and for heat insulation of steam-pipes. A fine granular variety is known as French chalk.

Merewether [97] examined 11 workers who were exposed to dust of French chalk in the tyre department of an india-rubber works, for periods varying from 10 to 32 years. He found that while the radiographic appearances suggested the presence of a developed, diffuse, interstitial fibrosis of the lungs with under 10 years' exposure, the clinical examination and other factors indicated that even after 30 years' exposure, only a peribronchial increase of fibrous tissue had resulted.

The suggestion is that the radiographic appearances seen really reflect the actual dust in the lungs, together with any associated congestion, rather than the presence of a diffuse fibrosis. The few examinations made so far did not disclose any appreciable disablement after exposures ranging from 9 to 32 years.

Examination of 13 additional workers, with exposures ranging from 4½ months to 40 years, supported the previous conclusion.[98]

Zanelli [99] described the case of a woman of 27 who had been employed for five years in the tyre department of a rubber factory where she was exposed to clouds of dust. The radiographic pictures showed an early tuberculous infiltration in the right subclavicular region, decrease in transparency of right compared with left due to increase in reticular shadows and nodular formations uniformly distributed through the right lung. In the left lung field the reticular shadows were accentuated, but there were practically no "nodules."

This case seems to show that the interaction of tuberculous infection with the silicate dust produced a radiological appearance of "nodules" of infective type in the right lung. It resembles the reaction with tubercle and china-clay.

Thorel [100] described in 1896 a case of talc pneumoconiosis which he designated *Speicksteinlunge*. Sand described the case of a woman who had worked for several years in an atmosphere of talc dust. *Post mortem* the lung showed the presence of much talc dust but without great reaction. This case was reported by Devoto and Cesabianchi.[101] Cunningham [102] examined a man employed for nine years grinding talc, and found evidence of pneumoconiosis. Dreessen [103] described the results of an investigation into working conditions in a tremolite talc-mine and mill and the effects on the health of the workers exposed to the dust. Those employed over five years (the longest was 16 years) and exposed to very high concentrations of dust showed first stage pneumoconiosis. The appearances were those of a fine, diffuse bilateral fibrosis. The changes did not cause disability. Dreessen and Dalla Valle [104] carried out a further survey of two talc-mining and manufacturing plants in Murray County, Georgia. Clinical and radiological examinations showed that 16 mill-workers out of 33 exposed to high concentration of dust and 6 of 13 miners had pneumoconiosis.

In 4 of the most seriously affected cases evidence of pulmonary infection was present.

Mica

A group of widely distributed rock-forming minerals, two of which, muscovite and phlogopite, are important commercially. Muscovite is a silicate of aluminium with potassium. It is used, on account of its transparency and its resistance to fire, for windows of stoves and lanterns. Ground mica is used in the manufacture of paper, wall-paper, and paint and as a lubricant and absorbent. Phlogopite is magnesium-aluminium silicate. It is almost exclusively used for electrical purposes. Dust is produced especially in the processes of sawing, grinding, and finishing.

Ferguson [105] examined 12 workers exposed to mica dust. In only 5 was the exposure as much as five years and these complained of cough and dyspnœa, the symptoms being slight except in one man, aged 59, who had been employed 32 years. He had well-marked pulmonary fibrosis and emphysema, and another, employed eight years, had quite definite fibrosis. Three men were examined radiologically. The radiogram of one man, employed 32 years, showed fibrosis, largely peribronchial in type, chiefly in the middle zones, with increased hilum shadows and, at one or two points, nodule formation. The other two radiograms showed increased hilum shadows with increased linear striation and fine, diffuse shadows in the middle zones. Ferguson, with a reservation regarding the small numbers, concluded that dust of mica may be capable of causing pulmonary fibrosis.

Sericite

A mineral of widespread occurrence, sericite is of interest in a study of the ætiology of silicosis because of its frequent association with quartz in rocks, exposure to the dust of which has caused the disease. It is a hydrous silicate of aluminium and potassium ($H_2KAl_3(SiO_4)_3$) and is produced in the decomposition of potash felspar. It occurs in two forms—silky, talc-like plates and minute needles. The occurrence of sericite in the gold-bearing banket of the Witwatersrand was described by Watkins-Pitchford and Moir.[106] They thought it "almost certain that a large proportion of the bright white images seen by polarized light in a silicotic-lung section of *Rand origin* are produced by sericite." Mavrogordato [107] included "intractable silicates, e.g., sericite," as a possible factor in the occurrence of silicosis.

Badham [108] suggested that the fine type of fibrosis of Western Australian miners is probably related to

sericite which is found in quantities greater than quartz in some of the mines.

It was not, however, until W. R. Jones published his paper in 1933 on Silicotic Lungs: The Minerals they Contain,[109] that sericite became familiar to everyone interested in the ætiology of silicosis. By petrological methods, he found the mineral, sericite, in rocks and materials which had given rise to silicosis, and in the lungs of 29 men who had died from the disease. Although quartz was also present it was subordinate in amount to sericite, especially in number of particles.

In the South Wales coal-mines and the gold-bearing quartz-conglomerate of South Africa, abundant sericite was shown to be present. The experience at the Broken Hill mines in New South Wales was cited to show that rocks with a low quartz content, but with fibrous silicate minerals, produced cases of silicosis. The physical property of sericite fibres, by which they remain suspended in the atmosphere, was demonstrated to show the opportunities for inhalation of the mineral.

The only industries in this country in which it appears that workers are exposed to dust of sericite without uncombined silica are those connected with the production of china-clay and manufactures in which it is used. The evidence at present available is insufficient to allow of a definite statement regarding the occurrence of pulmonary disease amongst these workers, as no systematic examinations have been carried out. The opinion of employers and workers in the china-clay industry is against the view that a high incidence of such disease is prevalent, and medical evidence is negative apart from the cases already mentioned.

Certain pulmonary changes have been produced by silicates, and, apart from asbestos, individual cases of fatal disease have occurred in which the dust of silicates seemed to be the cause. The disease, however, did not show the radiological or pathological signs which are characteristic of silicosis. This was the experience in South Africa in workers exposed, in a quarry, to dust of norite,[110] and in New South Wales with an orthoclase basalt,[111] and in the Great Cobar mine. Dr. Badham also described a fine type of fibrosis amongst the miners of Broken Hill, and of Western Australia and Tasmania.

Identity of Harmful Dusts

Kettle [112] utilised the interstitial method for determining the tissue reaction to various kinds of dust, and the influence on the local lesion of infection with tuberculosis. In these experiments "active" and "inert" dusts were distinguished. Colloidal amorphous silica caused necrosis; with crystalline silica necrosis was delayed, and the characteristic lesion was produced in 2 or 3 weeks.

Dust from a South African gold-mine caused lesions which differed scarcely, if at all, from those caused by amorphous silica. Shale from Altofts and Great Mountain collieries gave the characteristic reaction of silica, though modified by the high admixture of inert material. Kaolin had all the attributes of a soluble form of silica, while the lesion produced by asbestos mimicked that of crystalline silica, but the central coagulum was more pronounced. The lesion produced by carborundum was remarkable for its quiescence, and non-siliceous dusts characteristically showed quiescence. Following inoculation with tubercle bacilli the "active" dusts were: all compounds of silicon except carborundum—i.e., colloidal, amorphous, and crystalline silica, gold-mine dust, shale, kaolin, and asbestos.

A method was introduced by Kettle [113] for administration to experimental animals by the tracheal route of dust suspended in liquid. By this method [114] no substance other than silicon derivatives was found which caused more than a moderate degree of fibrosis of the lung, certainly not enough to interfere with its function, and no other constituent of ordinary dust which could influence unfavourably a pulmonary infection. All forms of crystalline silica appeared to be capable of producing the disease, and the closest reproduction of simple silicosis in man, so far obtained, occurred in guinea-pigs some 500 days after the introduction of a single dose of finely powdered flint into their lungs.

According to Gardner [115] the reaction to dust may be divided into five general phases: (1) early diffuse parenchymatous disease; (2) linear perilymphatic proliferation; (3) beading of the trunks; (4) enlargement of the mediastinal lymph nodes; and (5) late chronic proliferation and nodule formation in the finer connective tissues of the pulmonary parenchyma. Different phases of this picture are accentuated by various types of pure dust. Silica produces all of them. Pure fibrous asbestos produces generalised fibrosis involving primarily the finer connective tissues of the pulmonary framework. He [116] found that silicon carbide (carborundum) excited a moderate degree of parenchymatous reaction and some linear fibrosis. The other common industrial dusts generally set up a reaction that is characteristically linear, with more or less diffuse changes in the parenchyma but no nodule formation.

Beger [117] expressed the view that the action of dust is due to free silica, whether it contains quartz or silicates. He explains the findings of W. R. Jones by the slow solution of sericite, which he does not consider free from danger, though only the dissolved silica is the cause of the disease.

Siegmund [118 119] produced positive results by the intravenous injection of quartz. Typical silicotic lesions were produced in the liver, spleen, and other organs by dusts containing quartz, but not with quartz-free dust. Silicates produced the changes only after ten months; the delayed action is explained as due to dissolving out of silica. The fibrosis increased with a decrease in size of the quartz particles. Experiments with colloidal silica produced the greatest change.

Giese [120] had obtained similar results by injecting quartz into the blood stream, and negative results were obtained with dusts free from silica.

Stüber,[121] on the suggestion of Dr. C. K. Drinker, used the lymphatic glands as a rapid means of determining the toxicity of dusts. The cellular response of the lymph nodes to dusts of flint (99 per cent. free silica) and Barre granite (26·5 per cent. free silica) was peculiar in the appearance of "silica-cells," while some silicates, including asbestos, did not have this effect. Using this method, Drinker, Field, and Drinker [122] found that after 10 or 12 days the changes produced by two samples of sericite were similar to those of finely ground flint.

Haynes,[123] as a result of inhalation experiments on guinea-pigs, concluded that the most deadly of all dusts was precipitated silica. Less dangerous, but all producing fibrosis, were the following, arranged in order of decreasing toxicity: flint, slate, aluminium hydroxide, precipitated chalk, magnesium carbonate, and carborundum. The harmful effects of soluble silica may be neutralised by simultaneous administration of basic dusts such as aluminium hydroxide or magnesium carbonate, though the latter are harmful when inhaled alone.

Robson was struck by the fact that the incidence of silicosis was higher amongst the underground

miners in certain gold-mines in Ontario, than amongst the men employed in the crusher-houses, although the dust in the latter was greater in amount. The underground men suffered from headaches in the gassy atmosphere after blasting, and this suggested experiments to ascertain the effects of mine-gas on the ætiology of silicosis. With Irwin and King [124] experiments were carried out at the Banting Institute. Rabbits were exposed to the inhalation of irritating gases (NO_2 and SO_2); these produced degenerative lesions and predisposed to pneumonitis; dilute irritating gases combined with sericite dust produced no fibrotic changes in an exposure of 40 weeks; dilute irritating gases combined with silica dust gave rise, in periods of 13 weeks or more, to an acute pulmonary silicosis with typical silicotic nodules in the alveoli, in the lymphatic aggregations, and in the lymphatic glands.

Perrott, Babcock, Betting, and Jones [125] found oxides of nitrogen in mine drift air in concentrations averaging 250 parts per million. Gardner, Howell, and Jones [126] found sulphur dioxide in concentrations of from 100 to 900 parts per million.

In several anthracite mines in South Wales, where cases of silicosis had occurred, twenty samples of mine-air were taken at the working faces, just after blasting, and were tested for nitrogen peroxide.[127] In no case did it exceed 90 parts per million, and even this concentration could not have been present for more than 3 or 4 minutes after each shot. An exceptional figure, nearly 200 parts per million of nitrogen tetroxide, was found in another series illustrating deficient ventilation.

PERITONEAL RESPONSE TO VARIOUS DUSTS

Miller and Sayers [128] carried out a series of experiments in which a small amount of dust (0·2 g.) in suspension was injected into the peritoneal cavity of guinea-pigs. The response could be classified as absorption, proliferative, or inert reaction. In the *absorption* response the dust disappeared from the peritoneal cavity without the production of scar tissue. This was given with calcite, limestone, precipitated calcium carbonate, gypsum (calcium sulphate), and cement. It will be noted that these are all calcium compounds. In the *inert* reaction the amount of injected dust was unaltered, but there was active movement, by the action of phagocytes, over extensive areas of the peritoneum. This reaction was given by soapstone (talc or french chalk), carborundum (carbide of silicon), jewellers' rouge (ferric oxide), anthracite and bituminous coal, and ash, collected from a smoke stack effluent. In the *proliferative* reaction the nodules produced by the dust continued to increase in size up to 112 days after injection, the maximum duration of the tests, and it seemed likely that scar tissue would ultimately have resulted. Two samples of pure quartz produced this response. "Chat" (a waste product containing quartz and chert from the concentration of lead and zinc ores) gave a similar response.

While the histological variations in the three groups were not as striking as the well-marked gross responses, they were sufficiently distinctive to permit differentiation of the dusts into the same three groups.[129]

CHEMICAL ANALYSES OF LUNGS

Kettle and Archer [130] suggested that chemical analysis may prove to be the deciding factor in determining, in the absence of a typical fibrosis, whether or not tuberculosis of the lung may be regarded as due to occupation. In their experience an ordinary dried lung does not contain more than 0·2 per cent. of silica (that is, total silica).

Sladden [131] concluded that fibrosis of an important extent, clearly contributory towards death, is usually present when the silica content of the lungs exceeds 1 per cent. of the dried lung substance. When the silica exceeds 1·6 per cent. the fibrosis associated is, with practically no exception, very severe and sufficient in itself to lead to death. The 60 cases on which this conclusion was based included hard-heading workers in coal-mines, coal-hewers, coal-trimmers, stonemasons, and others.

Badham and Taylor [132] described a method for chemical analysis of lungs, and the results of analyses of the lungs of 31 persons. They showed that the pathological findings varied markedly and without any constant relationship to the silica content of the lungs. In 4 cases without exposure to dust, the lungs contained an average of 0·123 per cent. of silica in the dried tissue.

McNally [133] reached the conclusion that the silica content of the normal lung was 0·113 per cent. of dried tissue. In a series of eight lungs from workers exposed to dust the percentage of silica varied from 0·24 in a machinist to 2·60 in a granite-cutter, while a stone-quarryman's lung gave 0·50, a stone-cutter's 1·40, and a zinc-miner's 1·09. Fowweather [134] found in the lungs of 5 normal adults between the ages of 23 and 65, a silica content from 0·12 to 0·20 per cent., with an average of 0·163 per cent. He found no obvious connexion between the amount of silica in the lungs and the amount of fibrosis.

A series of 44 analyses of lungs was carried out by Dr. P. L. Sutherland for the Committee on Industrial Pulmonary Disease. There were 21 stonemasons in this group, and in these the average content of total silica in the dried lung tissue was 1·28 per cent. In a group of 13 sandstone-quarrymen the average silica content of the dried lungs was 1·72 per cent. The highest silica figure in this series, 7·04 per cent., was found in the lungs of a miner, aged 61, who had worked on ganister and coal, in the same mine, for 49 years. Both lungs were the seat of carcinoma, and small silicotic nodules and some consolidation were present.

Recent work by Belt, Irwin, and King [135] shows that the proportion of silica varies in different portions of the lungs of persons who have not been exposed to a dust hazard. They found that in normal adults' lungs the "silica" content averaged about 151 mg. per cent.; and 217 mg. per cent. in persons over 52 years of age. The tracheo-bronchial glands of most adults contained from twice to 20 times as much silica as the corresponding lungs.

It is generally found that the proportion of total silica in a normal adult lung is between 0·1 and 0·2 per cent. of the weight of dried lung. There appears to be no constant relationship between the amount of fibrosis and the proportion of silica in altered lungs. The presence in such lungs of large amounts of other dusts appears to be accompanied by retention of silica.

During the time after the exposure to dust has ceased and before death, the amounts, relative proportions, and even the character of the minerals become altered by the action of the tissues.[136]

Tideswell [137] examined a series of silicotic lungs with a view to determining the form in which the silica occurred and particularly to attempt to estimate the hydrated silica. He found that approximately 5 per cent. of the total silica in the lung examined was present in a readily soluble form.

King and Dolan [138] have shown that silica reaching the blood stream, either by absorption from the gut or by solution in the lung, is rapidly excreted in the urine. Soluble silica injected into the blood is quickly eliminated in the urine. There appears to be a low kidney threshold for silica. No significant differences were found in the silica level in the blood of normal and silicotic persons.

Removal of silica from the lungs by continued activity of phagocytes is recognised, and the presence in the sputum of dust-laden cells long after exposure to the source of dust has been frequently observed. Belt [139] observed that an œdematous state of the tissue favoured the activity and migration of dust-laden cells several months after the exposure to dust inhalation had ceased.

Conclusions

Certain conclusions regarding the ætiology of silicosis may be drawn from the consideration of the occupations in which the disease occurs.

(1) Where silicosis has been caused, that is, the nodular form of pulmonary fibrosis, exposure to the inhalation of silica in the uncombined state appears to have been present.

(2) With a dust-cloud of moderate concentration, the disease develops slowly and the nodules of fibrous tissue appear at certain situations in the lungs. This occurs in grinders of metal, workers on sandstone, and in pottery workers.

(3) When the dust contains a very high proportion of free silica, and is in a fine state of division, and the concentration of particles in the atmosphere is high, the disease tends to develop rapidly. In such cases the fibrosis retains the nodular form and develops at the usual sites, but it appears also in other parts of the structure of the lungs. This has been seen in flint-grinding, sand-blasting, and abrasive-soap manufacture.

(4) When the dust of free silica is inhaled mixed with certain other kinds of dust in important amount, the arrangement and distribution of the resulting fibrous tissue may be modified. Such modifications have been found in workers in coal-mines and hæmatite-mines.

(5) When the inhaled dust consists of silica combined with bases, as silicates, some degree of change in the pulmonary tissue appears to result. In this respect asbestos dust is unique amongst silicates in the prevalence and severity of the disease which it causes. The physical form of asbestos differs from that of all other industrial dusts.

(6) The fibrosis produced in the lungs by the action of silicates differs from that produced by free silica, and the types can be distinguished by radiological and histological means.

(7) In certain states of the lungs, for example in the presence of tuberculosis, the action of silicates may be modified.

Acknowledgments.—It is a pleasure to acknowledge the help and advice of many colleagues and friends in the preparation of these lectures. My thanks are due to the Committee on Industrial Pulmonary Disease for permission to use unpublished material, and especially to the chairman, Sir Arthur Hall; to colleagues in the Home Office and the Mines Department, to members of the Silicosis Medical Board, as well as to many friends in this country and abroad, of whom mention has been made in the text.

REFERENCES

74. Merewether, E. R. A.: Tubercle, 1933, xv., 69, 109, 152.
75. Dep. Committee on Compensation for Ind. Diseases, Minutes of Evidence, London, 1907, Cd. 3496, p. 127.
76. Fahr: Deut. med. Woch., 1914, xl., 1548.
77. Merewether, E. R. A., and Price, C. W.: Rep. on the Effects of Asbestos Dust on the Lungs and Dust Suppression in the Asbestos Industry, H.M. Stationery Office, London, 1930.
78. Cooke, W. E.: Brit. Med. Jour., 1924, ii., 147.
79. Gardner, L. U.: Jour. Amer. Med. Assoc., 1933, ci., 595.
80. Gloyne, S. R.: THE LANCET, 1932, i., 1351.
81. Beger, P. J.: Virchows Archiv, 1933, ccxc., 280.
82. Stewart, M. J., and Haddow, A. C.: Jour. Path. and Bact., 1929, xxxii., 172.
83. Simson, F. W., and Strachan, A. S.: Ibid., 1931, xxxiv., 1.
84. Page, R. C.: Amer. Jour. Med. Sci., 1935, clxxxix., 44.
85. Gloyne, S. R.: Tubercle, 1931, xii., 158.
86. Merewether, E. R. A.: Ibid., 1933, xv., 69, 109, and 152.
87. Ann. Rep. Chief Insp. Factories, 1934, London, p. 62.
88. Wood, W. Burton, and Gloyne, S. R.: THE LANCET, 1934, ii., 1388.
89. Gloyne, S. R.: Tubercle, 1930, xi., 151.
90. Policard, A.: Bull. d'Histologie Appliquée, Faculté de Médecine de Lyon, 1933, vii., 195.
91. Gardner, L. U., and Cummings, D. E.: Jour. of Indust. Hyg., 1931, xiii., 112.
92. Gloyne, S. R.: Tubercle, 1933, xv., 445, 493, 550.
93. Koppenhöfer, G. F.: Archiv. f. Gewerbepath. u. Gewerbehyg., 1935, vi., 61.
94. Fowweather, F. S.: Refractories Jour., 1934, x., 176.
95. Kettle, E. H.: Jour. of Path. and Bact., 1934, xxxviii., 206.
96. Siegmund, H.: Archiv. f. Gewerbepath. u. Gewerbehyg., 1935, vi., 17.
97. Merewether, E. R. A.: Ann. Rep. Chief Insp. Factories, London, 1933, p. 63.
98. Ann. Rep. Chief Insp. Factories, 1934, London, p. 65.
99. Zanelli, A.: Talcum Pneumonoconiosis, Medicina del lavoro, Milan, 1931, No. 1.
100. Thorel, C.: Beitr. z. path. Anat. u. z. allg. Path., 1896, xx., 85.
101. National Congress on Occupational Diseases, Turin, 1911.
102. Cunningham: Dept. of Indust. Hyg., Toronto. Quoted by Zanelli, op. cit.
103. Dreessen, W. C.: Jour. of Indust. Hyg., 1933, xv., 66.
104. Dreessen, W. C., and Dalla Valle, J. M.: U.S. Pub. Health Rep., Washington, 1935, vol. l., No. 5.
105. Ferguson, T.: A Note on Mica Dust and the Lung Condition of Some Mica Workers. Unpublished memo. to Comm. on Indust. Pulm. Dis. of Med. Research Council, 1932.
106. Watkins-Pitchford, W., and Moir, J.: On the Nature of the Doubly-refracting Particles Seen in Microscopic Sections of Silicotic Lungs, S.A. Inst. for Med. Res., Johannesburg, 1916, No. 7, p. 12.
107. Mavrogordato, A.: Contributions to the Study of Miners' Phthisis, S.A. Inst. for Med. Res., 1926, No. 19, p. 18.
108. Badham, C.: Studies in Industrial Hyg., Rep. of Public Health Dept., New South Wales, Sydney, 1927, No. 13, p. 102.
109. Jones, W. R.: Jour. of Hyg., 1933, xxxiii., 307.
110. Mavrogordato, A.: Studies in Experimental Silicosis, S.A. Inst. for Med. Res., 1922, No. 15, p. 10.
111. Badham, C.: Rep. of Pub. Health Dept., New South Wales, Sydney, 1927, p. 105.
112. Kettle, E. H.: Jour. Path. and Bact., 1932, xxxv., 397.
113. Same author: THE LANCET, 1934, i., 889.
114. Same author: Bull. Inst. Min. and Met., 1934, xliii., 478.
115. Gardner, L. U.: Jour. Amer. Med. Assoc., 1933, ci., 596.
116. Same author: Amer. Rev. Tuberc., 1923, vii., 344.
117. Beger, P. J.: Med. Klin., 1934, xxx., ii., 1222 and 1258.
118. Siegmund, H.: Aerzt. Sachverst.-Ztg., 1934, xl., 285.
119. Same author: Archiv. f. Gewerbepath. u. Gewerbehyg., 1935, vi., 1.
120. Giese, W.: Beitr. path. Anat., 1935, xciv., 442.
121. Stüber, Katherina: Jour. of Indust. Hyg., 1934, xvi., 282.
122. Drinker, C. K., Field, M. E., and Drinker, P.: Ibid., 1934, xvi., 296.
123. Haynes, F.: Jour. of Hyg., 1931, xxxi., 96.
124. Robson, W. D., Irwin, D. A., and King, E. J.: Canad. Med. Assoc. Jour., 1934, xxxi., 237.
125. Technical Paper 482, U.S. Bureau of Mines, 1930.
126. Bull. 287, U.S. Bureau of Mines, 1927.
127. Haldane, J. S.: Rep. of Mining Res. Lab., Univ. of Birmingham, 1935, p. 4.
128. Miller, J. W., and Sayers, R. R.: U.S. Pub. Health Rep., 1934, p. 80.
129. Same authors: Microscopic Appearance of Experimentally Produced Dust Nodules in the Peritoneum, U.S. Pub. Health Rep., 1935, p. 1619.
130. Kettle, E. H., and Archer, H. E.: Proc. Roy. Soc. Med. (Sect. of Path.), 1933, xxvi., 15.
131. Sladden, A. F.: THE LANCET, 1933, ii., 123.
132. Med. Jour. of Australia, 1933, xx., 511.
133. McNally, W. D.: Jour. Amer. Med. Assoc., 1933, ci., 584.
134. Fowweather, F. S.: Refractories Jour., 1934, x., 173.
135. Belt, T. H., Irwin, D. A., and King, E. J.: Canad. Med. Assoc. Jour., 1936, xxxiv., 125.
136. Fowweather, F. S.: Refractories Jour., 1934, x., 176.
137. Tideswell, F. N.: Ibid., 1934, x., 185.
138. King, E. J., and Dolan, M.: Canad. Med. Assoc. Jour., 1934, xxxi., 21.
139. Belt, T. H.: Canad. Pub. Health Jour., 1929, xx., 501.

GOOLE HOSPITAL.—Lady Eaglesome is laying the foundation-stone of the extensions of the Goole Bartholomew Hospital on Saturday. The extensions, which will cost about £11,000, will include a new ward, a modern operating theatre, and a laundry. Some £2500 is already in hand.

ÆTIOLOGY OF LYMPHADENOMA

SENSITISED VACCINE OF THE ELEMENTARY BODIES

By M. H. Gordon, C.M.G., D.M. Oxon., F.R.S.
CONSULTING BACTERIOLOGIST TO ST. BARTHOLOMEW'S HOSPITAL

THERE is little doubt that the disease lymphadenoma is the reaction of the human body to some specific pathogenic agent. Prolonged laboratory investigation [1] has indicated, first by a process of exclusion, secondly by positive microscopical findings, and more recently by direct clinical observation, that the causal agent in question is represented by the very minute spherical or oval elementary bodies (E.B.'s) that occur in vast numbers and apparently in pure culture in the affected lymph glands,[2] especially during the acute stage. Microphotographs of these lymphadenoma bodies have been published previously, and, in particular, some admirable photographs taken by Dr. A. C. Coles from his own preparations [2] demonstrate very clearly that in general appearance, size, and morphology these "Hodgkin bodies" bear a close resemblance to the well-known E.B.'s of Paschen that have now been proved to be the virus of vaccinia. In a number of other virus diseases also similar E.B.'s occur [3] and constitute in all probability the exciting agents, and as knowledge grows the bolder term of virus bodies seems to become more suitable for them. At the same time, like larger pathogenic organisms, E.B.'s are beset with "pseudo" forms and minute granules resembling them in greater or less degree occur not infrequently in control materials,[4 5] so that while its importance is fundamental, further evidence in addition to the microscopical is required in order to arrive at their significance.

Rationale

INVESTIGATIONS OF FRESH SERA

Since lymphadenoma does not appear to be communicable as such to laboratory animals, progress at present can be obtained solely by observations on human beings affected by the disease. Investigation of fresh specimens of serum from cases of lymphadenoma for the presence of flocculating antibodies to a suspension of E.B.'s obtained from lymphadenoma glands, employing for this purpose the macroscopic technique previously found successful in case of vaccinia virus [6 7 8 9] and latterly in that of Shope's fibroma virus, has given what appear to be positive results in a proportion of cases, the control sera and antigens being negative. In order to economise materials special narrow tubes were used, and readings were made after an exposure of 18–24 hours at 53°–55° C., as that had proved successful in previous flocculation tests with the two index viruses mentioned. Non-specific flocculation has been the chief difficulty, and Wassermann-positive sera should be avoided. From present experience it seems advisable to test the serum of lymphadenoma cases as fresh as possible, and the most promising antigens at the moment appear to be (1) the supernatant of the dried gland after it has been carefully ground up in saline (1 : 50) and spun in an ordinary centrifuge (3000 rev. per min.) for half an hour, and (2) the Seitz filtrate of the same. But in the serum of lymphadenoma cases so far, of which 18 specimens have been examined with various forms of antigen prepared from the glands, the reaction has in my hands not been consistent or strong enough to be likely to be useful for purposes of diagnosis until the technique of carrying out these tests with the E.B.'s and their soluble products has improved. It is of interest here to note that recent observations by Craigie and Wishart in Canada [10] and by Bedson in this country [11] indicate that the antigenic constitution of certain viruses—namely, vaccinia and psittacosis—are complex, comprising a thermostabile as well as a thermolabile fraction; and Craigie has further found evidence [9] since confirmed by Parker and Rivers [12] that a specific soluble substance giving a precipitin reaction can be extracted from the E.B.'s of vaccinia. If a precipitin reaction can be employed to detect virus infections generally many of the present difficulties in the case of lymphadenoma may possibly disappear.

THERAPEUTIC TESTS

Morphological and serological studies, however, are not the sole means of solving the problem of the significance of these E.B.'s present in the affected glands during lymphadenoma, and during the past 2½ years evidence has come from a new direction. Therapeutic trial of vaccines of the E.B.'s separated from the patient's own glands has provided important confirmatory evidence of their ætiological rôle, since it has revealed, as Gow pointed out,[13] that when attenuated in various ways and administered subcutaneously in the form of a vaccine, lymphadenoma patients in whom the disease is progressing are hypersensitive to them. As a similar state of hypersensitivity to a comparatively small dose of vaccine of the infecting micro-organism occurs in the acute stage of infections by the ordinary pathogenic bacteria, this hypersensitivity of the lymphadenoma patient to a suspension of the E.B.'s from his own gland is highly significant. Now experience during the past 25 years has shown repeatedly that in acute infections by the ordinary pathogenic bacteria such hypersensitivity can generally be overcome by combining the vaccine of the killed suspension of the particular infecting micro-organism with its specific antibodies—in other words, by sensitising it. In order to prepare serum containing the requisite antibodies, a rabbit is injected intravenously or intraperitoneally with a series of increasing doses of the vaccine, usually killed by heat. As a rule, after five or six injections at weekly intervals, specific flocculating antibodies are to be found in the serum, and the presence of complement-fixing antibodies and opsonin can also be demonstrated. When this stage has been reached the vaccine is sensitised by allowing it to remain in contact with some of the rabbit's serum in vitro for an hour or two at 37° C., and then overnight at room temperature in order to absorb the specific antibodies. When flocculation is completed the agglutinated organisms now united with their specific antibodies are separated off by centrifuge, the supernatant fluid thrown away, and the deposit shaken up in saline and again deposited by centrifuge. This washing of the deposit in saline is repeated four or five times in order to free the flocculated organisms combined with their specific antibodies from serum. After being sensitised and washed in this manner the vaccine excites no reaction, and when administered at short intervals in sufficient dose is in my experience a particularly simple, effective, and economical method of applying specific treatment to cases of acute bacterial infection, especially in instances where *Streptococcus pyogenes* is concerned.[14 15 16] The early benefit, when it occurs, seems to be due chiefly to the antibodies

with which the vaccine is united, but there is reason to believe that gradually some degree of active immunity is also set up from ingestion of the bodies of the bacteria in the vaccine; these are readily absorbed since they are coated with opsonin and are thus "sensitised." For producing durable active immunity, however, an ordinary unsensitised vaccine seems to be superior if it can be tolerated; for instance, in a bad case of pruritus vulvæ due to *Streptococcus fæcalis*, while the sensitised vaccine quickly brought relief the pruritus gradually returned and only cleared up completely when the same vaccine was given unsensitised.

In view of this encouraging practical experience over a long period with sensitised vaccine at the acute stage of infections by the common pathogenic bacteria, more especially by *Streptococcus pyogenes*, the next step was to prepare flocculating antiserum to the E.B.'s present in suspensions of lymphadenoma glands, in order that a sensitised vaccine of them could be tried for treatment. There is little doubt that viruses can be sensitised by specific flocculating serum in the same way as bacteria. Prophylactic experiments made by Craigie and Tulloch with living vaccinia virus after flocculation by specific antiserum [8] have already shown that immunity can be produced by this method without exciting any lesion at all, and that the interval before immunity occurs is the same as with the unsensitised virus. Some experiments have also been carried out recently in my laboratory for the express purpose of testing the therapeutic value of a sensitised vaccine of the killed (phenol) flocculated and well-washed E.B.'s of that most useful index virus, the virus of Shope's fibroma of the rabbit. It has been found that the intravenous administration of such a suspension, when unsensitised, aggravates the young cutaneous lesions, rendering them more congested and swollen than the parallel lesions of the same age in a control untreated rabbit. On the other hand, when an equal portion of this same E.B. suspension was flocculated by specific antiserum, and these floccules separated off by centrifuge, well washed in several changes of saline, and injected intravenously, the result was distinctly beneficial; for the lesions seemed to be more limited and pale than those in the control untreated rabbit. This restraining influence was only evident while the flocculated E.B.'s were being administered, so that the beneficial action, as in the case of a sensitised bacterial vaccine, seemed to be due chiefly to the antibody charge in this sensitised vaccine of Shope's virus. The experiments, of which three sets have now been carried out with the same result, are being continued as time permits in order to ascertain the scope and limits of the method, and especially in order, if possible, to arrive at the optimum antiserum to employ for sensitising Shope's virus.

Preparation of the Sensitised Vaccine

At present the preparation of a sensitised vaccine of the lymphadenoma E.B.'s for therapeutic trial has been proceeded with in the following manner.

(1) One or more of the enlarged lymphatic glands removed aseptically from the lymphadenoma patient by the surgeon are placed in a sterile test-tube or bottle and sent to the laboratory. Although it is best to proceed to the next step at once, glands if necessary can be kept for several days in cold storage, or even sent by post. In order to avoid contaminations no fluid addition should be made at this stage.

(2) The gland is transferred to a sterile Petri dish, which is already placed under cover in a small glass case with one side open, standing on the laboratory bench. A piece of the gland is cut off with a recently sterilised safety razor blade and used for sections. The rest of the gland is now weighed on a sterile watch glass, and if there is enough of it a gramme is transferred to a sterile mortar in a small glass case and cut up as small as possible with sharp scissors having rounded ends and slowly but thoroughly ground to pulp. While continuing the grinding sufficient ordinary broth (pH 7·2) to make a 1 : 10 suspension is added gradually, and the contents of the mortar are then run into a sterile test-tube, well shaken, and allowed to stand. If enough material is available, a similar 1 : 10 suspension can be made in saline, and, again if material permits, some of the gland is dried at room temperature in a vacuum desiccator and sealed in a test-tube which is preserved in the cold store. Part of each suspension is usually kept frozen in the refrigerator, and another part allowed to remain fluid there in order to autolyse.

(3) Cultures are made at once from the suspensions, and if contaminations such as the skin staphylococcus are present carbolic to 0·5 per cent. is added.

BIOLOGICAL TEST

After standing overnight in the refrigerator for the result of the culture to be seen, 1 c.cm. of the supernatant fluid of the fresh broth suspension is transferred to a small test-tube and 0·4 c.cm. injected into the brain of a rabbit, anæsthetised by the inhalation of equal parts of absolute alcohol and ether. The remainder is then injected into its ear vein. The rabbit is kept under observation for a week, and if the characteristic syndrome of spastic paresis, rigidity, ataxia, &c., is produced, it makes the diagnosis of lymphadenoma more certain. Although the nature of the encephalitogenic agent concerned in this reaction is not yet certain, and, as Friedemann has pointed out,[17] an agent with similar properties occurs in normal marrow and occasionally elsewhere, lymph glands appear to be free from it except in lymphadenoma. Confirmatory evidence of the diagnostic value of this test [1 2] when applied to glands removed for biopsy from cases of suspected lymphadenoma has been brought forward by van Rooyen,[18] van der Hoeden and Hulst,[19] Bortolozzi,[20] Davis,[21] Smith,[22] Rosenberg and Bloch,[23] and others. Glands from patients at an advanced stage of lymphadenoma are not infrequently negative in this biological test which is of chief use at the early stage of the disease, or where the histological picture is atypical. These, however, are the very cases where in practice help is most needed.

ANTIGEN FOR PREPARING FLOCCULATING SERUM

In some of the early cases the supernatant of the 1 : 10 suspension of the gland in broth was used undiluted. The result proved satisfactory but extravagant as regards material, of which usually only a very limited amount is available.

At the present time, in order to obtain a suspension of the E.B.'s for preparing a sensitised vaccine of them, the primary 1 : 10 suspension of the gland in broth is thawed, well shaken, and allowed to stand. A 1 : 10 dilution is then made from some of it in saline, which if need be may contain 0·5 per cent. of phenol, and this is centrifuged at top speed (3000 rev. per min.) for 30 mins. to deposit the cells and particles of tissue. The supernatant of this 1 : 100 suspension is kept for use as antigen for the rabbit and also for preparing the sensitised vaccine. Generally the supernatant shows a faint uniform haze, and a drop of it spread in a very thin film on a cover-glass or slide and stained by Löffler's flagella stain or Giemsa may show the minute E.B.'s in vast numbers. After some of the original suspension of the gland in broth has been allowed to autolyse for over 10 days in the refrigerator, more E.B.'s seem to be set free, and the same thing occurs apparently when the

primary suspension in broth is repeatedly frozen and thawed.

Such partially autolysed suspensions may form valuable reinforcements as antigen at later stages in the preparation of the rabbit. In some cases drying the gland in a vacuum desiccator before preparing a suspension of it in broth improves its antigenic capacity for the production of flocculating serum.

FLOCCULATING ANTISERUM

Young rabbits of 1500–2000 grammes have been injected at weekly intervals with gradually increasing doses of the antigens prepared in the manner described above. The venous route has been used chiefly, but the subcutaneous and peritoneal routes were also employed at later stages. At the beginning when the supernatant of the 1 : 10 broth suspension of the gland was employed, the weekly doses that produced a successful antiserum were (1) 0·5 c.cm.; (2) 0·5 c.cm. followed two hours later by 1·5 c.cm.; (3) 1 c.cm. followed by 1 c.cm. So far all the doses were given venously, but in (4) 1 c.cm. by vein was followed by 1 c.cm. subcutaneously, and in (5) 0·5 c.cm. by vein was followed by 1·5 c.cm. sub cutem. Seven days after this last dose and 35 days from the start the rabbit's serum produced excellent flocculation of the supernatant of a 1 : 100 suspension of the gland that had been centrifuged for 30 mins. at 3000 rev. per min.

At the present time, as stated in the last section, the supernatant of a 1 : 100 suspension of the gland is being used as antigen. The doses that proved successful in a recent severe case were as follows, at weekly intervals by vein: (1) 1 c.cm.; (2) 1·5 c.cm.; (3) 1·5 c.cm.; (4) 2·5 c.cm. in fractions of 0·5 c.cm. followed two hours later by 2 c.cm. (half sub cutem); (5) repetition of the last dose entirely intravenously. A week later (again 35 days from the start) excellent flocculating serum was obtained, but in other cases larger doses have been required, even up to 5 c.cm., before successful flocculating serum was produced. If sufficient antigen is available it is well to inject two rabbits because one may yield better flocculating serum than the other. Occasionally complete failures occur, but so far this has been exceptional.

In order to preserve the flocculating serum 0·5 per cent. of phenol is added by slowly mixing the serum with one-tenth of its volume of 5 per cent. of phenol dissolved in warm saline, and thorough admixture is secured by running the serum from one test-tube to another and warming it slightly. In this way precipitation is avoided or greatly reduced. The serum is preserved in a cool cupboard, but does not seem to keep very well.

THE SENSITISED VACCINE

In order to prepare a sensitised vaccine of the E.B.'s, 1 c.cm. of the 1 : 100 centrifuged supernatant of the patient's gland is put into a centrifuge tube and heated for 30 minutes to 56° C. Then 2 c.cm. of the rabbit's serum is added if the antiserum is from a homologous rabbit, but 4 c.cm. if the serum comes from rabbits prepared against the E.B. suspensions of other cases. The centrifuge tube is well shaken and placed in a water-bath at 37° C. for two hours, then taken out and left at room temperature overnight. If flocculation is now obvious the specimen is proceeded with, but if not it is discarded and the rabbit given further and larger doses. When flocculation is good, 2 c.cm. of saline containing 0·5 per cent. of phenol is usually added to the centrifuge tube on the second day, and the tube shaken and put at 37° C. for 2–4 hours to continue the flocculation, and then again left at room temperature overnight. In some cases very minute feathery flocculi can now be made out with the hand glass, floating in the fluid and adhering to the sides towards the lower end of the tube. These have been stained and examined on some occasions, and they seem from present evidence to consist largely of agglutinated E.B.'s, the earlier flocculation being due in part to a precipitin reaction from an antibody in the rabbit's serum to the human protein in the gland suspension. When flocculation is complete—and best results so far have been obtained when this occurs within 24 hours—the supernatant fluid is absolutely clear. The centrifuge tube is then spun for 30 mins. at 3000 rev. per min. It is next inverted in order to get rid of the supernatant fluid and unagglutinated E.B.'s. The deposit containing the flocculated E.B.'s adheres to the bottom of the tube, and is then taken up in 10 c.cm. of saline containing 0·5 per cent. of phenol, well shaken, and again centrifuged for half an hour when the supernatant is again discarded. This washing of the flocculi is usually carried out four times, and finally the deposit is suspended in 10 c.cm. of phenol saline. This represents the flocculated E.B.'s from a 1 : 1000 concentration of the gland, and after being cultivated in order to prove sterility, it is carefully labelled and then kept in the refrigerator as it is the stock suspension from which consignments for the particular patient for whom it was prepared can be made up by dilution as required. The first vaccine is usually made by diluting 0·5 c.cm. of this 1 : 1000 suspension with 19·5 c.cm. of phenol saline in a vaccine bottle. This represents the sensitised E.B.'s from a 1 : 40,000 dilution of the gland, and the first dose recommended is 0·1 c.cm. sub cutem followed at five-day or weekly intervals by the same dose before raising it. If any reaction is produced a pause is recommended till the temperature subsides, and then lowering the dose to the previous level until toleration improves. This however is a matter best left to the clinician. Amongst other things the weight of the patient should provide a valuable index of progress.

Films of the flocculated specimen of the gland suspension before diluting it have been made on many occasions and stained by Löffler's flagella stain. Numerous flocculi can be seen, and in some of them flocculated E.B.'s have been made out. The coating of antibodies tends to interfere with the definition of these minute bodies, and some of the flocculi seem to be precipitated protein from the antihuman precipitin in the serum. In appearance the flocculated lymphadenoma E.B.'s resemble those of Shope's fibroma virus and of vaccinia also when flocculated in the same way by their respective antisera. Submerging the film in 1 per cent. acetic for a few minutes, followed by a good wash before staining it, may improve the definition of the flocculated E.B.'s. The slide or cover-glass on which such films are made must be absolutely grease-free and the film well dried in the first place, or the E.B.'s are apt to become detached in the staining process and subsequent washings.

So far as possible, an attempt is being made to prepare a homologous sensitised vaccine for each case. This is not always practicable as the amount of gland received may not be sufficient. Again, a homologous antiserum takes at present from 4–5 weeks to prepare, and it may be desirable to avoid

delay. Under such circumstances the flocculating antisera prepared against the E.B. suspensions of previous lymphadenoma cases have been tested against the supernatant of the gland, and the antiserum that gives the best flocculation, or a mixture of such antisera, used for sensitising the vaccine of his own E.B.'s given to the patient. In cases where no gland is available, or where the gland has been ruined by placing it in formalin solution, trial has been made of the sensitised E.B. vaccine from another case of lymphadenoma.

General Remarks

The underlying argument in the clinical trial of the sensitised vaccine prepared in the manner described may be stated as follows. If the E.B.'s are the true causal agent of lymphadenoma, then from the analogy of experience with sensitised vaccines in acute bacterial infection in man, the combination of these lymphadenoma bodies with their specific antibodies in the form of a sensitised vaccine should be capable of bringing about definite clinical improvement in the same way. The first object therefore to ascertain is whether in suitable cases the administration of a sensitised vaccine of the flocculated E.B.'s prepared in the manner described from a lymphadenoma patient's own gland is followed by clinical improvement or not. It is obvious that there are certain limits to the results that can be expected from a sensitised vaccine, and here the following remarks may be repeated that were made when considering this same point in relation to severe cases of infection by *S. pyogenes*.[15]

"The first question is what would a sensitised vaccine be expected to do in such a case? Now the method being one of stimulating the patient's specific resistance, it is clear before we start that the main factor in a patient's recovery from an acute bacterial infection must always be his own general resistance. All that we can hope to do with a method such as the present one is to bring out his specific resistance to the utmost extent possible and in the speediest time; in short to *accelerate* the immunising mechanism of the patient. I think that you will agree that if we are able to do this without detriment to the patient in other respects, we have a therapeutic measure that in certain cases is likely to prove of very valuable service indeed."

A further point should be borne in mind. In examples of acute infection by *S. pyogenes* the disease whatever the outcome is often of comparatively brief duration, and some patients with good resistance recover without any specific treatment at all. In the case of lymphadenoma, on the other hand, the course of the disease at present is uniformly of such a persistent and malignant character that the circumstances are even more unfavourable and should improvement occur with the present form of treatment, the further problem of maintaining such improvement will arise. Obviously too the stage of the disease at which such a treatment as the present one is applied, and the age and general condition of the patient will also be important factors. Nevertheless, the repeated success of sensitised vaccine in cases of acute infection by *S. pyogenes* clearly indicates that if, as the available evidence suggests, the E.B.'s are the causal agent of lymphadenoma, then a sensitised vaccine of them is well worthy of trial. For it is conceivable that at a critical point the administration of even a small dose of the requisite antibodies may furnish a timely reinforcement to the patient's specific resistance and turn the scale at any rate for the time being in his favour.

REFERENCES

1. Gordon, M. H.: Rose Report on Lymphadenoma, London, 1932; Brit. Med. Jour., 1933, i., 641.
2. Same author: Proc. Roy. Soc. Med., 1934, xxvii., 1035.
3. Bedson, S. P.: Newcastle Med. Jour., 1935, xv., 55.
4. Coles, A. C.: THE LANCET, 1935, ii., 135.
5. Merling-Eisenberg, K. B.: Brit. Jour. Exper. Path., 1935, xvi., 414.
6. Gordon: Med. Research Council, Spec. Rep. Ser. No. 98, London, 1925, p. 59.
7. Burgess, W. L., Craigie, J., and Tulloch, W. J.: Ibid., Ser. No. 143, London, 1929.
8. Craigie and Tulloch: Ibid., Ser. No. 156, London, 1931.
9. Craigie: Brit. Jour. Exper. Path., 1932, xiii., 239.
10. Craigie and Wishart, F. O.: Ibid., 1934, xv., 390.
11. Bedson: Ibid., 1936, xvii., 109.
12. Parker, R. F., and Rivers, T.: Jour. Exper. Med., 1935, lxii., 65.
13. Gow, A. E.: Proc. Roy. Soc. Med., 1934, xxvii., 1043.
14. Gordon: THE LANCET, 1913, i., 1796.
15. Same author: Proc. Roy. Soc. Med., 1913, vi., 153.
16. Same author: Brit. Med. Jour., 1931, i., 283.
17. Friedemann, U., and Elkeles, A.: Ibid., 1933, ii., 1110. Friedemann: Ibid., 1934, i., 517.
18. van Rooyen, C. E.: Ibid., 1933, i., 644; Ibid., 1933, ii., 562; Ibid., 1934, i., 519. Ogilvie, R. F., and van Rooyen: THE LANCET, 1933, ii., 641. Mackenzie, I., and van Rooyen: Brit. Med. Jour., 1935, i., 406.
19. van der Hoeden, J., and Hulst, L. A.: Nederl. Tijdschrift voor Geneeskunde, 1934, lxxviii., 4305.
20. Bortolozzi, M.: Minerva Medica, 1934.
21. Davis, W. B.: Brit. Med. Jour., 1935, i., 324.
22. Smith, E. C.: THE LANCET, 1935, ii., 874.
23. Rosenberg, D. H., and Bloch, L.: Jour. Amer. Med. Assoc., 1936, cvi., 1156.

ACUTE ALIMENTARY CATARRH IN THE NEW-BORN

BY W. S. CRAIG, B.Sc. Glasg., M.D., M.R.C.P. Edin.

HON. ASSISTANT PÆDIATRICIAN TO THE ROYAL MATERNITY HOSPITAL; ASSISTANT PHYSICIAN TO THE WESTERN GENERAL HOSPITAL; AND LECTURER IN THE UNIVERSITY DEPARTMENT OF CHILD LIFE AND HEALTH, EDINBURGH

THERE is still doubt about the relative importance of infection and disturbed metabolism as causes of the diarrhœas of infancy.

This article is based upon observations made in the Royal Maternity Hospital, Edinburgh, over a period of 3½ years on all infants developing symptoms of severe gastro-intestinal disturbance. There were 41 cases: of these 17 occurred in minor epidemic form in August and September, 1935. An important feature was the frequency with which symptoms appeared in infants healthy at birth. There were 11 fatal cases.

The term acute alimentary catarrh has been applied to the cases under discussion as it indicates primary involvement of the gastro-intestinal tract by an acute catarrhal condition, irrespective of its inflammatory nature.

NATAL HISTORY AND FEEDING

In the series 38 infants were born at term, 2 were post-mature, and 1 slightly premature; delivery was spontaneous in 32, instrumental in 7, and operative in 2. Apart from asphyxia after delivery in one case all the infants were healthy at birth.

Cow's milk was included in the feeds of 39 of the 41 infants. It was given for the first time within twelve, eight, and four days of birth in 6, 15, and 20 cases respectively. At the time of onset of the illness 2 infants had been breast-fed and 5 artificially fed from birth; 10 were having complementary feeds and in the remaining 24 feeding at the breast had been replaced by a cow's milk mixture. The indications for artificial feeding were related to the mother in every case. The standard artificial feed employed was a citrated mixture of equal parts of cow's milk and water sweetened with dextromaltose (1 oz. to

the pint of mixture). All milk was sterilised by scalding for 20 minutes in a double saucepan.

CLINICAL FEATURES

There was an unmistakable similarity in the picture presented by these cases. Signs of mild dyspepsia appeared within 48–72 hours of the first introduction of cow's milk into the feeds; the infant became listless, the appetite less keen, and weight progress slower. The condition remained unchanged for one or two days. The stools then became increasingly loose and eventually watery in consistence and foul smelling. Occasionally fœtor of the motions preceded diarrhœa. The colour of the stools was green or brown; it varied in different cases and in the same individual. Evacuations numbered from 5–12 in the day, involving a considerable loss of fluid.

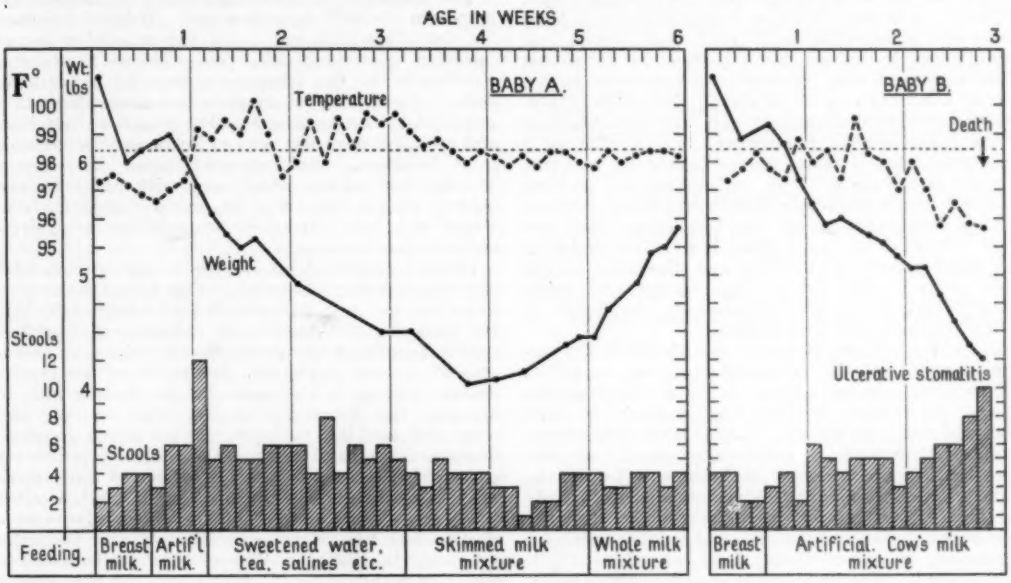
Fever quickly followed the onset of diarrhœa; it rarely exceeded 101° F., was irregular in character, and fell by lysis. A progressive decline in weight commenced; the daily loss was 3–4 oz. Occasional vomiting once or twice in the day was common; the vomitus contained mucus frequently streaked with blood. Evidence of dehydration and toxic absorption was soon apparent; subcutaneous tissues disappeared, bony prominences protruded, the skin became dry and wrinkled, and the colour grey and muddy. Weakness increased daily and was evident in the cry and the movements of eyes and limbs. Several cases showed abdominal distension (with intestinal peristalsis). Thirst was not a feature.

There was severe stomatitis of an ulcerative nature in 24 children. In 4 the buccal condition appeared simultaneously with the diarrhœa, in 5 it preceded acute intestinal symptoms by one or two days, and in the remaining 15 cases it occurred as a late complication of the abdominal condition.

In fatal cases death came gradually and was preceded by a period of semi-coma. In those who recovered a return of the temperature to normal was the first evidence of improvement; it was followed by diminution in the number of stools and a readiness to take weak milk mixtures. Sudden arrest of the fall in weight was followed by progressive gain. The character of the motions changed slowly; gradual disappearance of fœtor was the earliest indication of improvement; a slow return of healthy colour and consistence was interrupted by fitful recurrences of loose green stools. In the majority of cases further progress was uneventful and recovery was complete within 7–10 days of the first sign of improvement. Recovery was delayed in several infants in whom a recurrence of symptoms resulted from early modifications of the feed.

PROGRESS

In the 30 surviving children a history of recurrence of severe alimentary disturbance necessitating medical attention was obtained in no less than 19. Vomiting and diarrhœa followed the addition of starch foods to the diet in 9 and the introduction of fish and/or meat in 3 children; one child showed an intolerance of egg. In the remaining cases gastro-intestinal symptoms were the result of qualitative or quantitative errors in connexion with the diet. The shortest interval elapsing between the time of discharge from hospital and the return of symptoms was 3 months. There were 4 children aged over three years and 12 between two and three at the time of their last examination. There was no history of gastro-intestinal symptoms in any of these cases after the age of eighteen months.



Two cases of acute alimentary catarrh.

PATHOLOGY AND BACTERIOLOGY

Autopsies were carried out on the 11 fatal cases within a few hours of death. Constant findings included gaseous distension of the abdomen; intense hyperæmia and swelling of the alimentary mucosa, more in the intestines than in the stomach; and swelling of Peyer's patches and the mesenteric glands. Severe ulceration was present in 2 cases and was not related to any form of obstruction. Degenerative changes were not characteristic of other abdominal viscera. There was early leptomeningitis due to *Bacillus coli* infection in 2 cases.

Bacteriological examination of stools obtained during life was carried out in connexion with 33 cases. Cultures gave mixed growths; *Bacillus pyocyaneus* was present in 1 case and *Streptococcus viridans* in 3; in other cases they showed no departure from the normal type of intestinal flora. Cultures of swabs from mouths usually gave mixed growths: the organisms obtained included *B. coli*, *S. viridans*, pneumococcus, Pfeiffer's bacillus, and *Staphylococcus albus*. Streptococci were cultured from both mouth and stools in 2 cases. *B. coli* were present in both the mouth and stools of 15 infants.

TREATMENT

Success depended upon early recognition of the condition. Cases showing mild dyspepsia were carefully watched. With the appearance of loose stools and fever, milk feeds were discontinued and fluids given by mouth were limited to sweetened water and weak tea. Rectal salines were employed in only a limited number of cases; they were seldom retained and tended to aggravate any inflammation of the lower bowel. Parenteral administration of a 5 per cent. glucose saline proved invaluable and was adopted as a routine. Daily subcutaneous injections of 30–50 c.cm. were given; the interval was lengthened as fluid intake by mouth was increased. In a few cases where exceptional fluid loss accompanied a prolonged period of vomiting and diarrhœa, salines were given twice daily. The intravenous route (longitudinal sinus) was successfully employed in 2 cases of sudden grave collapse.

In the few children in whom vomiting was distressing enough to call for treatment, improvement followed the removal of mucus by a single gastric lavage. In others similar improvement resulted from the oral administration of sodium bicarbonate (grs. 2) before feeds. Considerable benefit resulted from gentle washing out of the lower bowel when the motions were fœtid or contained mucus. Liquid paraffin (4 drachms) left in the rectum lessened the pain of defæcation and the risk of excoriated buttocks. Petroleum emulsion (½ dr.) and ol. ricini (ℿ 2) were given in mixture form three or four times daily. Bismuth (bismuth carb. grs. 2; spir. chlorof. ℿ 1; pulv. trag. co. gr. 1; aq. anethi ad ½ dr.) was employed in the few cases where the above measures were not followed by improvement of the stools. The effective use of bismuth depended upon isolated doses rather than routine administration; given in excess it resulted in toxic absorption. It arrested the most intractable diarrhœa and improvement often resulted from a single dose. Increase in the fœtor of the motions or the appearance of a putty-like stool were indications for discontinuing it. Brandy in small doses proved the most suitable stimulant. Abdominal colic was relieved by the application of a light Antiphlogistine poultice. Temperatures were taken in the groin as insertion of the thermometer into the rectum was found to stimulate intestinal peristalsis.

An attempt to reintroduce milk was made after the temperature had settled; a citrated mixture was offered consisting of equal parts of skimmed milk and water sweetened with dextromaltose. In the absence of contra-indications an additional milk feed was given on each successive day. The same gradual method was used to introduce diluted unskimmed milk feeds when the rising weight curve commenced to lag or the infant appeared hungry. Byno-chrismol in small doses (¼ dr., t.i.d.) was found useful at this stage; the combination of malt and liquid paraffin assisted in building up body-weight at the same time as lessening intestinal irritability.

Dried milk (humanised) was successfully employed in 2 infants who showed a prolonged inability to digest cow's milk mixtures. To 3 children showing similar intolerance foster-mother's milk was given for several weeks before the gradual introduction of cow's milk. The use of lactic acid in 3 cases was not successful.

The most successful treatment of the stomatitis consisted in the gentle application of wool, soaked in hydrogen peroxide (1 : 20 dilution) to the infected surfaces and subsequent spraying of the buccal cavity with a mixture of water and boro-glycerin (equal parts).

DISCUSSION

The ætiology of acute alimentary catarrh in the new-born is still undetermined. Original workers on the subject looked upon the condition as an infective gastro-enteritis. Von Reuss [5 6] attaches significance to the alimentary tract as a portal of entry for infection, but suggests that acute alimentary conditions may be due to disturbance of nutrition and metabolism rather than to inflammation resulting from infection. Cruickshanks [3] bases his support of this view on the infrequency with which inflammatory lesions are found at autopsy on infants in whom a clinical diagnosis of enteritis or gastro-enteritis has been made.

Neither view explains all the facts connected with the cases under discussion. The initial symptoms following the first introduction of cow's milk into the feeds in 39 infants were evidence of disturbed gastric function; the subsequent vomiting of blood-stained mucus indicated the state of congestive catarrh present in the stomach. In cases coming to autopsy the intestinal mucosa was swollen and congested, and it is probable that the severe diarrhœa characteristic of all cases of the complete series was contributed to by downward extension of the catarrh originating in the stomach. Von Reuss [5] ascribes the "transitional stools" of breast-fed infants to a similar but less severe condition of the intestinal mucosa; the indigestibility of cow's milk as compared with human milk would explain the greater severity of the pathological findings and clinical symptoms in our cases.

Rominger [7] stresses the importance of an epidemic appearance of "acute dyspepsia" as an indication of the infective nature of the condition. The facts relating to the cases involved in the minor outbreak included in this series support this view; the only two entirely breast-fed infants with acute alimentary catarrh developed symptoms at the time when the condition was epidemic. Infection is also suggested by the close similarity of the autopsy findings with those recorded by Cramer [2] in two cases of gastro-enteritis thought to be due to streptococcal infection and by Jampolis [4] in a series in which the causal organism was *Bacillus mucosus*. The absence of intestinal ulceration in the majority of autopsies in this series is in keeping with the view expressed by von Reuss [6] that infection of the alimentary mucosa is not necessarily accompanied by severe local changes.

The results of the bacteriological investigations suggest that infection may be due to a number of different organisms. In this respect the condition resembles the summer diarrhœa of older infants, which as Topley [8] points out is an epidemiological but not necessarily a bacteriological entity. The occurrence of stomatitis in 58 per cent. of infants indicates the risks of exogenous infection; the frequent presence of the same organism in the mouth

and stools of the individual is strong evidence in favour of infection having reached the intestine via the mouth. It is probable that the path of infection was the same in a number of cases in which the buccal mucous membrane appeared healthy, but the possibility of enterogenous infection cannot be ruled out.

The catarrhal condition of the bowel resulting from digestive disturbance would favour enterogenous infection. This in turn would explain the occurrence of *B. coli* septicæmia which is relatively common in the new-born and which gave rise to meningitis in 2 cases of the series. The results of bacteriological investigation show, however, that the mouth was another possible source of infection in these particular cases. The important point is that the alimentary catarrh resulting from the earlier digestive disturbance favoured intestinal infection, irrespective of the exact source of the organism. Appreciation of this fact is essential for preventing acute alimentary conditions during the early weeks of life.

Prevention depends upon removing risks of infection and upon avoiding minor disturbances of digestion. Observations made in the present series suggest that the path of alimentary infection is often by the mouth. There is strong support for this view in the frequency with which Aries [1] found *B. coli*, streptococci, and other organisms in the buccal cavity of newly born infants. The need for scrupulous attention to the hygiene of the mouth cannot be over-emphasised and sources of infection must be looked for in the mother, attendants, or bottle feeds.

The predominance of artificially fed infants in this series indicates the greatly increased likelihood of dyspepsia with the use of a substitute for human milk. Breast-feeding cannot be advocated too strongly; discontinuance should not be permitted without proper appreciation of the attendant risks to the child. The fact that in the present series milk was given for the first time to 20 infants within four, to 15 infants within eight, and to 6 infants within twelve days of birth shows that the risk attached to the use of a substitute for human milk decreases with each few days of life. The use of foster-mother's milk lessens the risk and whenever possible should be given during the first two weeks of life to infants deprived of their own mother's milk. Where this is not possible endeavour should be made to ensure that changes in feeding are gradual; in 21 cases of the series digestive disturbances arose in large measure as a result of the sudden introduction of artificial feeding necessitated by the death or removal from hospital of the mother. Even where maternal factors require discontinuance of breast-feeding (temporarily or permanently) the introduction of a substitute milk should be as gradual as the mother's condition will permit.

The subsequent histories of surviving children indicate the need for the same care in later infancy when starch or animal food is being added to the diet. The frequency with which severe gastro-intestinal symptoms recurred suggests that the alimentary mucosa may remain peculiarly sensitive for many months to changes or errors of diet. It is possible that many of the dyspepsias of later infancy and early childhood may be attributed to this incomplete recovery from acute intestinal catarrh in the first few weeks of life.

SUMMARY

In all 41 cases of acute gastro-intestinal disturbance have been described. The view is held that the condition is primarily a result of infection. It rarely occurs in breast-fed infants. Intestinal catarrh resulting from digestive disturbance is an important factor favouring alimentary infection and acute catarrhal conditions of the alimentary tract in the neonatal period may be responsible for dyspepsia in later infancy and early childhood.

I wish to express my thanks to Prof. Charles McNeil for valuable criticism of this paper, to Prof. R. W. Johnstone for permission to refer to obstetrical records, to Dr. T. Y. Finlay and Dr. Ian Sutherland for assistance in tracing cases after their discharge from hospital, and to Dr. A. R. Macgregor for bacteriological reports.

REFERENCES

1. Aries, L. J., Pilot, I., and Shaffer, M. S.: Amer. Jour. Obst. and Gyn., 1932, xxiii., 745.
2. Cramer, H.: Quoted by von Reuss, ref. 5, p. 245.
3. Cruickshanks, J. N.: Med. Research Council Report, 1930, Ser. No. 145.
4. Jampolis, M., Howell, K. M., Calvin, J. K., and Leventhal, M. L.: Amer. Jour. Dis. Child., 1932, xliii., 70.
5. von Reuss, A.: Diseases of the Newborn, London, 1920.
6. ,, ,, : Diseases of Children (Pfaundler, M., and Schlossmann, A., English translation by Peterman, M. G.), London, 1935, vol. iv., p. 456.
7. Rominger, E.: Ibid., p. 106.
8. Topley, W. W. C., and Wilson, G. S.: The Principles of Bacteriology and Immunity, London, 1931, vol. ii., p. 1034.

PERNICIOUS ANÆMIA

FOLLOWED BY CARCINOMA OF THE STOMACH

BY S. SILVERMAN, M.D. Leeds

CLINICAL ASSISTANT, QUEEN'S HOSPITAL, BIRMINGHAM

DURING recent years attention has been focused on the coexistence of pernicious anæmia and carcinoma ventriculi. Although not many cases have been recorded in detail, there is some evidence that the same factors that are said to lead to the clinical picture of pernicious anæmia might, by their continued action over a longer period, give rise to a cancerous change in the gastric mucosa.

Hurst [1 2] maintains that pernicious anæmia and the associated achylia are the result of gastritis from chronic irritation of the stomach, and that this gastritis is sometimes a precancerous change, which terminates in a definite neoplasm of the stomach. Witts [3] states that evidence has been produced which suggests that sufferers from pernicious anæmia are more than ordinarily liable to carcinoma of the stomach.

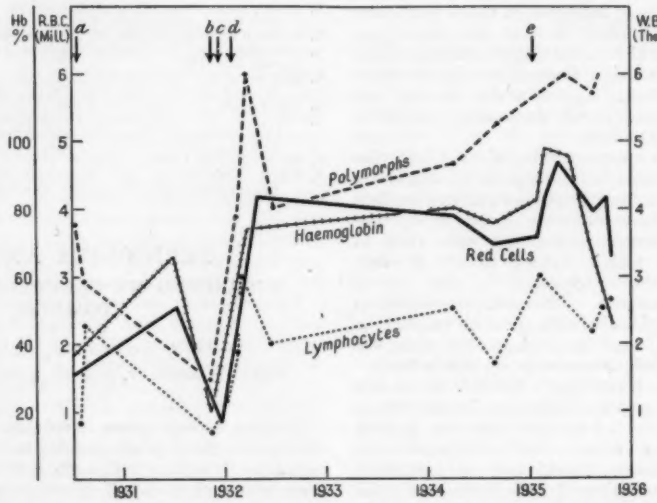
The following case of a patient of mine, under treatment over a period of six years for pernicious anæmia and exhaustively investigated as such, who finally developed a carcinoma of the stomach, verified at autopsy, is therefore of interest.

CASE REPORT

A man aged 57, a range fitter, complained of lack of energy, loss of weight, shortness of breath, cramps and stiffness in ankles and toes. The onset was 9 months before his first admission on June 14th, 1930, to the General Hospital, Birmingham, under care of Prof. L. G. Parsons. He had some septic teeth. His blood pressure was 115/60 mm. Hg. There were no signs of nervous disease except a suggestion of nystagmus on looking to the right and to the left. Blood count on admission: red cells 1,575,000, hæmoglobin 36 per cent., colour-index 1·1. The results of subsequent counts are given in the Chart. Gastric analysis showed complete absence of free hydrochloric acid, persisting after the injection of histamine; total acid maximum 10 c.cm. N/10 HCl per 100 c.cm.; mucus was present in the fasting juice and in one further sample. He was put on stomach extract Extomak, and then Ventriculin with acid. hydrochlor. dil., and his teeth were treated. July 14th: red cells 2,320,000, hæmoglobin

67 per cent. He was discharged on July 17th and resumed work in September, but continued with the ventriculin. He put on weight and was feeling better. At the beginning of August, 1931, however, he began to lose energy, and he had attacks of breathlessness and giddiness at work and in the street. A blood count in October showed red cells 1,482,000 and hæmoglobin 31 per cent. Cramps in both ankles recurred in November, these coming on about twice a week during the day and when he was in bed at night.

He was readmitted to hospital on Oct. 28th. On admission he had a yellowish complexion and an icteric tinge in both sclerotics. There was pallor of the lips and palpebral conjunctivæ. He now had artificial teeth; the gums and mucous membranes were very pale; the tongue was clean. The apex-beat of the heart could scarcely be detected on palpation and the heart sounds were difficult to hear in the aortic area. His blood pressure was 112/63 mm. Hg. Reflexes were normal. The hæmoglobin dropped to 20 per cent.; in the blood there were nucleated red cells, poikilocytosis, anisocytosis, and punctate basophilia. A fractional test-meal again showed absence of free acid, the total acid maximum now being 8; starch was absent after 1½ hours; mucus was present in the fasting juice and in two further samples.



a = Ventriculin; *b* = Hepatex; *c* = Blood transfusion; *d* = Antrotomy; *e* = Campolon.

Chart of the blood counts showing some improvement in the red cell count and the hæmoglobin with, however, a fall in leucocytes after ventriculin. The rise in the former two was not maintained, in spite of the addition of hepatex, until antrotomy was performed when there was improvement, which was maintained almost consistently. Campolon produced a further increase, slightly greater in the hæmoglobin. There was a terminal fall in the red cells and especially in the hæmoglobin. Leucopenia with a relative lymphocytosis was present almost throughout except after the antrotomy and in the later stages.

He was given two tubes of ventriculin per day and, in addition, Hepatex, 5 c.cm. daily, intramuscularly, and ferri. et ammon. cit. He also had several transfusions of 8–10 oz. of citrated blood. Little reaction, however, was obtained in response to treatment. The blood counts throughout the patient's illness are shown in the Chart. Because pus was seen running down into the post-nasal space, and both antra were dull on transillumination and X ray, bilateral antrotomy was performed by Mr. Musgrave Woodman in January; clear yellow fluid was obtained from the right antrum and thin pus from the left. This was followed by daily antrum washouts. The patient now began to make an uninterrupted recovery, and improvement continued until in March red cells were 4,190,000 and hæmoglobin 74 per cent. He was discharged from hospital and resumed work in April, but he continued to take liver emulsion regularly. He worked until February, 1935, when he had a relapse and had to leave his work. He was put on Campolon, 2 c.cm. weekly, with liver extract by mouth. He went to a convalescent home and on his return still stayed away from work, though his condition gave rise to no anxiety.

In August his general weakness increased and was accompanied by new symptoms in the form of a dull and continuous pain in the interscapular region and upper abdomen, accompanied by flatulence after food and loss of appetite with nausea and occasional vomiting. He was seen by Prof. Parsons in consultation on Oct. 16th, when a gastric carcinoma was suspected, and was readmitted to the General Hospital on Oct. 22nd, 1935.

On admission he was evidently losing much weight and his complexion was now a sallow rather than a lemony yellow tint. The mucous membrane of the palate and cheeks was very pale; the tongue was red and fairly rough, with slight furring on the surface, especially of the posterior portion. The abdominal wall was soft, lax, and rather protuberant; two masses could be felt beneath the costal margin, the one a palpable liver, the other hard and moving only slightly on respiration, situated in the left half of the epigastric region, its margin being ill-defined. Both these masses projected downwards to within an inch of the umbilicus. Percussion confirmed the above findings, liver dullness commencing in the fifth right intercostal space. There was tenderness on deep pressure in the epigastric region. On examination of the nervous system anosmia was present. There were still nystagmoid movements on deviation of the eyes to the extreme right and left. The upper limbs were very wasted, movements being equally weak on both sides. The abdominal muscles were particularly flabby and the lower limbs extremely weak and wasted, the left more so than the right. The paræsthesiæ previously present in his lower limbs had not been experienced for a long time. Sensation was normal. The abdominal reflexes were elicited. The left knee- and ankle-jerks were present, the right absent. The plantar responses were flexor. The apex-beat was neither visible nor palpable. The boundaries of the heart were difficult to percuss owing to lung hyper-resonance. The heart sounds were soft but no murmurs or irregularity were detected. A fractional test-meal on Nov. 28th showed some blood in the fasting juice, complete absence of free acid, maximum total acid 30, but acid deficit was much greater than on previous occasions; starch still present after 2½ hours; mucus in fasting juice and four other samples; no lactic acid or Oppler-Boas bacilli. X ray of the lumbar spine and long bones revealed no secondary malignant deposits.

He was given campolon 8 c.cm. on admission, followed by 4 c.cm. daily, and ferri. et ammon. cit. grs. 30 t.d.s. On Nov. 1st he was also given pulv. tribasic mag. phosph. 1 drachm between meals; towards the end he required morphia, omnopon, and nepenthe to control his pain. He died on Nov. 11th, 1935.

Post-mortem report.—Body poorly nourished and anæmic. No noteworthy changes in upper respiratory or digestive tracts.

Heart: 300 g.; intense toxæmic softening of myocardium with agonal thrombus in right ventricle; no valvular lesions; coronary arteries showed patchy atheroma.

Lungs: basal confluent broncho-pneumonia.

Abdomen: generalised suppurative peritonitis and gangrenous appendicitis; the appendix was ruptured near the tip and there was evidence of localised peri-appendicular suppuration.

Stomach: the lesser curvature was adherent to the under surface of the liver. The organ was thickened and showed diffuse lymphatic spread, carcinomatous permeation affecting the greater part of the lesser curvature along which the lymph glands showed gross secondary carcinoma. Similar changes were present in the subpyloric nodes. On opening the stomach the greater portion of its wall was found to be infiltrated with a fungating and partially ulcerated carcinoma. The growth had apparently originated in the fundus, and the advancing edge of its distal portion stopped short ½ in. from the pylorus.

Liver: 3200 g.; riddled with massive secondary deposits of new growth. Spleen: 175 g.; toxic softening and terminal congestion. Kidney (average): 130 g. Pancreas, adrenals, biliary and urogenital tracts: normal.

DISCUSSION

A number of cases have been reported showing the association of pernicious anæmia and malignant disease of the stomach.

Conner and Birkeland,[4] in an analysis of pernicious anæmia at the Mayo Clinic, found 11 cases in which there was definite or probable carcinoma of the stomach in association with definite or probable pernicious anæmia. In only 6 of these could the sequence as to incidence be established, and in only 3 did the carcinoma develop after pernicious anæmia. In one of the latter, carcinoma was revealed by X rays and the repeated presence of blood in the gastric contents and stools, 7–8 years after the apparent onset of pernicious anæmia, but no necropsy was done; in the second, by X rays and operation after 7½ years; and in the third by X rays after 18 months, but there was no operation or autopsy. Miller [5] records a case where, 10 years after the onset of pernicious anæmia, X rays revealed an extensive pyloric carcinoma, verified at autopsy, and a second case where X rays showed an annular inoperable carcinoma of the stomach 18 months after the onset of pernicious anæmia. In the last cases of these authors, however, early carcinomatous changes may have produced a blood picture resembling pernicious anæmia.

Saltzmann [6] records a case of pernicious anæmia and carcinoma verified at autopsy 6 years after the onset. Strandell [7] records a case with an ulcerating carcinoma of the pylorus at autopsy 11 years after the onset of anæmia, and another of cancer of the greater curvature, diagnosed and resected 6 years after, death following a little later.

Plummer [8] records the case of a man who had definite signs and symptoms of pernicious anæmia in 1926 and who developed enlarged cervical glands in 1931. A fractional test-meal then showed traces of blood. The man died aged 63 in October, 1931, the operation finding of carcinoma of the stomach on Sept. 26th being confirmed at autopsy.

Wilkinson [9] records a case similar to my own of a man who had been under treatment for pernicious anæmia some 5 years before the onset of an inoperable gastric carcinoma, which had a singularly rapid onset and progress, and which was confirmed at autopsy. Wilkinson also quotes the cases of Bloch, Borovanská-Felklová, Brandes, Israel, Lazaras, Lubarsch, Morawitz, Porges, Rink, Zadek, Waterfield and Shackle, these being verified at autopsy, and the case of Garvey and Stern verified by laparotomy. In a number of these, however, the chronology of the two conditions could not be determined with any certainty owing to the short period of investigation. For instance, in Garvey and Stern's case subacute combined degeneration was diagnosed in November, 1922, and the patient died of gastric carcinoma in May, 1923.

Weil and Bernard [10] quote a case of pernicious anæmia with death 8 years after the onset, autopsy revealing a pediculated cauliflower growth of the greater curvature of the stomach with a secondary nodule in the left lobe of the liver.

Some observers (Wilkinson,[11] Cabot [12]) maintain that the association of carcinoma of the stomach and pernicious anæmia is purely fortuitous. Wilkinson points out that in his own 370 cases of pernicious anæmia the incidence of all types of carcinoma was less than 1·6 per cent. as compared with 0·148 per cent.[13] in the general population in 1931, and that the average age of his cases—i.e., 56 in males and 49 in females—is very similar to that of malignant disease. Naegeli,[14] Bloch,[15] and Minot [16] are amongst those who believe it possible that the carcinoma develops on soil of pernicious anæmia. Weil and Bernard [10] point out that Wilkinson's own figures, of 28 cancers following pernicious anæmia, include 22 in the stomach, a large proportion (78·5 per cent.) that appears rather to support the existence of some relationship between the two conditions.

Miller [17] and Hurst [1] both divide carcinomata of the stomach into two groups. There is a minority group 10 per cent. or less, with a long history of gastric symptoms where the carcinoma is secondary to ulcer, and associated with the presence of free acid, and a majority with a short history of gastric disturbance and associated with achlorhydria. In this latter group of cases the scarcity of fractional test-meal reports makes it difficult to affirm that the achlorhydria was a pre-existing and possibly causal factor, but cases have been recorded by Hurst,[2] Veale (quoted by Hurst [1]), Alexander,[18] and Porges [19] in which achlorhydria had preceded for some years the onset of carcinoma.

The history of a family studied by Borovanská-Felklová [20] is interesting in this connexion. The father died of cancer of the stomach, the eldest son developed cancer of the stomach with pernicious anæmia, and three other sons are achylic, two of these having pernicious anæmia.

These facts suggest that the achylia might be a cause common to the two conditions. Against this view it can be contended that in carcinoma the deficit is in the hydrochloric acid, whereas in pernicious anæmia there is also absence of the intrinsic factor, which, as shown by Castle,[21 22] plays such an important part in its causation. It is however possible to conceive that this achlorhydria or increase of pH when acting over many years is capable of inducing, on the one hand, such changes in the gastric mucosa as might lead to failure in the elaboration of the intrinsic factor, or, on the other hand, to allow the action of some carcinogenic agent present in the body, such as the bile acids to which attention has recently been directed.[23]

The rarity of carcinoma of the stomach in simple achlorhydric anæmia [24] seems to negative this, although the earlier age-incidence of simple achlorhydric [25] compared with pernicious anæmia might account for the discrepancy.

There is yet another possibility; just as carcinoma is known to supervene upon pre-existing chronic inflammatory lesions so it may be expected to arise in pernicious anæmia cases in the gastric mucosa that is the seat of a chronic atrophic or hypertrophic gastritis.[17 26] Simpson [27] quotes Plummer's case mentioned above, where carcinoma followed pernicious anæmia after a long remission under liver therapy, and includes a photograph showing a section of the stomach wall in this case and illustrating a pre-existing chronic atrophic gastritis. The increasing frequency of neoplastic changes in cases of pernicious anæmia would then be ascribed to the patients being kept alive for a much longer period owing to the more modern therapeutic methods at our disposal. It is for future investigations to determine whether or not such factors are at work.

SUMMARY

In this case, pernicious anæmia was followed after six years by carcinoma of the stomach, with an interval of three years of comparative good health. The association of the two diseases in this case and others that have been reported may be due: (1)

simply to coincidence; (2) to an increase in pH due to achlorhydria, acting over a long period, which produces changes in the gastric mucosa leading to pernicious anæmia, and subsequently permits some carcinogenic agent formed in the body to produce its effect; (3) to the chronic inflammatory change observed in association with the pre-existing pernicious anæmia leading to a cancerous transformation of the mucosa.

More information as to the incidence of this association will be required before any definite conclusion can be reached.

I must express my indebtedness to Prof. L. G. Parsons, under whose care this patient was admitted, to other members of the staff, and to the medical committee of the General Hospital, Birmingham, for their kind permission to publish the notes and reports.

REFERENCES

1. Hurst, A. F.: THE LANCET, 1929, ii., 1023.
2. ,, ,, : Quart. Jour. Med., 1932, i., 157.
3. Witts, L. J.: THE LANCET, 1934, ii., 1407.
4. Conner, H. M., and Birkeland, I. W.: Ann. Internal Med., 1933, vii., 89.
5. Miller, T. G.: Internat. Clin., 1935, i., 167.
6. Saltzmann, F.: Acta Med. Scand., 1931, lxxv., 198.
7. Strandell, B.: Ibid., 1931, lxxv., 1.
8. Plummer, N. S.: Guy's Hosp. Rep., 1931, lxxxi., 407.
9. Wilkinson, J. F.: Quart. Jour. Med., 1933, xxvi., 281.
10. Weil, P. E., and Bernard, J.: Presse méd., 1935, xliii., 97.
11. Wilkinson, J. F.: Acta Med. Scand., 1933, lxxx., 466.
12. Cabot, R. C.: Modern Medicine, Osler, W., and McCrae, T., London, 1927, vol. v., p. 33.
13. Ann. Rep. Chief Med. Off. Min. of Health, London, 1931, p. 89.
14. Naegeli (quoted by Hirschfield, H.): Zeits. f. Krebsforsch., 1912, xi., 376.
15. Bloch, E.: Deut. Arch. f. klin. Med., 1903, lxxvii., 277.
16. Minot, G. R.: Oxford Medicine, 1920, London, vol. ii., p. 589.
17. Miller, T. G.: Amer. Jour. Med. Sci., 1933, clxxxvi., 192.
18. Alexander, S.: Münch. med. Woch., 1908, lv., 2086.
19. Porges, O.: Magenkrankheiten, Vienna, 1929, p. 163 (quoted by Hurst, ref. 2).
20. Borovanská-Felklová: Folia hæmatol., 1930, xl., 178.
21. Castle, W. B.: Proc. Roy. Soc. Med., 1929, xxii., 58.
22. Castle and Locke, E. A.: Amer. Jour. Med. Sci., 1931, clxxxii., 741.
23. Ann. Rep., Brit. Empire Cancer Campaign, 1934, xi., 6.
24. Witts, L. J.: Personal communication.
25. ,, ,, : Guy's Hosp. Rep., 1930, lxxx., 253.
26. Jones, C. M., Benedict, E. B., and Hampton, A. O.: Amer. Jour. Med. Sci., 1935, cxc., 596.
27. Simpson, C. K.: Guy's Hosp. Rep., 1935, lxxxv., 102.

ADENOCARCINOMA OF THE STOMACH AND HYPERCHROMIC ANÆMIA

BY N. G. HULBERT, M.B. Camb.

SENIOR RESIDENT AT THE METROPOLITAN HOSPITAL, LONDON

THE following case appears of considerable general interest both in its diagnosis and in its bearing on the problem of hæmopoiesis.

A married woman, aged 37, was admitted to the Metropolitan Hospital on Dec. 24th, 1935, for pain in the back, anæmia, and fever. She had had a healthy early life, apart from typhoid fever when aged 14, and she had had 5 healthy children and no miscarriages.

From July–August, 1933, she was in the hospital with a 14 days' history of abdominal pain and melæna. Hæmoglobin 26 per cent. She was transfused, treated as a case of duodenal ulcer and given iron. On discharge the hæmoglobin was 84 per cent. Since then she attended the out-patient department for insomnia and pains in the shoulders, but no definite dyspepsia. In December, 1933, barium-meal radiography showed a normal stomach.

One year before admission she became pregnant and four months before admission she gave birth to a healthy child after a normal labour. Two months later she developed pain in the back.

On admission she appeared pale; general nutrition good; breasts lactating. Blood pressure 130/85 mm. Hg; general and pelvic examination revealed no abnormality.

Investigations.—Blood counts: Dec. 28th, 1935—

Red cells	2,750,000	White cells	15,000
Hæmoglobin	50 %	Polymorphs	73 %
Colour-index	0·9	Lymphocytes	22 %
Normoblasts and polychromasia cells not enlarged.		Large mono...	4 %
		Eosinophils	1 %
Halometer reading	4·7		

Bleeding time prolonged and platelets reduced.

Jan. 1st, 1936—

Red cells	1,500,000	White cells	7800
Hæmoglobin	30 %	Polymorphs	59 %
Colour-index	1·0	Lymphocytes	33 %
Many normoblasts and anisocytosis. Some cells enlarged.		Large mono...	7 %
		Eosinophils	1 %
Halometer reading (i.e., on borderline of macrocytic anæmias.)	4·5		

Fæces for occult blood: repeated examinations negative.

Fractional test-meal: Total acidity below 0·036 per cent. and absolute achlorhydria. Resting juice normal; no odour, no discoloration, and no blood.

Radiography of lumbar vertebræ and sacrum revealed no metastatic new growth. Barium enema showed a megacolon.

Treatment.—Large doses of iron; liver extract intravenously and intramuscularly; extract of hog's stomach and Marmite orally.

Blood transfusions, 500–700 c.cm., were given on Jan. 21st, 26th, Feb. 5th and 8th, but with only a very temporary improvement.

Progress.—Temperature at first 100°–101° F. and later 101°–103° F. Bowels required frequent enemata. Jan. 21st: liver and spleen palpable. Feb. 11th: definite icterus. Feb. 13th: dyspnœa increased considerably in proportion to the anæmia and the patient died.

Post-mortem.—General nutrition good. The stomach, which was normal in size and not of the leather-bottle type, showed considerable thickening of the wall. Microscopically there was a diffuse adenocarcinoma involving the posterior wall and adherent to the pancreas, without ulceration or scarring of the overlying mucosa.

Liver, weight 5 lb. 9 oz. Whitish-yellow deposits, ¼ in. in diameter, scattered throughout in moderate numbers. Microscopically it presented a remarkable picture; the liver sinusoids were much dilated and filled with large carcinoma cells and some primitive blood-cells. The macroscopic deposits showed definite acinar formation.

Suprarenals and the lymph glands adjacent to the stomach showed similar deposits. The bone-marrow of the right thigh showed increased red marrow. The spleen was enlarged, congested, and soft. A blood-film from the heart showed numerous normoblasts. The other organs were normal.

COMMENTS

The diagnosis remained in doubt till death; failure to respond to therapy was against pernicious anæmia. The good general nutrition, lack of gastric symptoms, and the absence of blood in fæces or stomach-juice was against carcinoma of the stomach. Infective endocarditis was considered a possibility in view of the fever, leucocytosis, and splenic enlargement. Similar cases have been reported showing fever, without alimentary hæmorrhage, and with a red cell count similar to pernicious anæmia but with a polymorphonuclear leucocytosis; in these the liver sinusoids have been filled with cancer cells, without gross metastases, and have shown areas of primitive blood-cells. This difficulty of diagnosis is such, that at the Mayo Clinic all cases of pernicious anæmia are said to have routine barium meal radiography. Macht suggests the inhibition of the rate of growth of plant-seedling roots in 1 per cent. blood-serum as a method of distinguishing these cases of carcinoma from pernicious anæmia.

In this case there was not sufficient evidence to suggest a reaction in the bone-marrow around metastases as a source of the primitive red cells, and the cancer had not infiltrated enough of the stomach

wall to inhibit directly the intrinsic factor of hæmopoiesis, so a preceding gastritis or atrophy would appear the most likely cause of the blood picture. In this respect the failure of the anæmia to react to iron and liver is worthy of note.

I wish to thank Dr. J. W. Linnell for permission to publish this case and Dr. H. C. Lucey for the pathological investigations.

REFERENCES

1. Conner, H. M., and Birkland, I. W.: Ann. Internal Med., 1933, vii., 89.
2. Cheney, G.: Folia hæmat., 1934, lii., 51.
3. Cain, A., and Olivier, J.: Rev. méd. franç., 1934, xv., 639.
4. Macht, D. I.: Med. Rec., 1934, cxl., 480.
5. Miller, T. G.: Internat. Clin., 1935, liv., 167.
6. Oertel, H.: Jour. Path. and Bact., 1935, xl., 323.
7. Davidson, M.: Post-Grad. Med. Jour., 1935, xi., 221.
8. Stebbins, G. G., and Carns, M. L.: Arch. of Path., 1935, xx., 247.

RESECTION OF THE LOWER ŒSOPHAGUS AND CARDIA

By E. G. Muir, M.S. Lond., F.R.C.S. Eng.

ASSISTANT SURGEON TO KING'S COLLEGE HOSPITAL, LONDON

The history of the surgical attack on carcinoma of the œsophagus is a record of perseverance and endeavour that has hardly had its just reward. There can be no doubt that, in the main, this is due to the age and poor physique of these patients, the situation of the growth, and the late stage at which the majority seek advice; but possibly surgery cannot be completely absolved from an assumption that the chances of success are so small that radical operations are not worth the attempt. It is perhaps germane to point out that a similar history could be given for a number of surgical operations which, in the past seldom performed and then with a high mortality, are now standard surgical procedures. Recent successful cases of œsophageal resection reported by Grey Turner,[1] Tudor Edwards,[2] and King[3] have helped to stimulate interest in this condition and to strengthen the belief that radical surgery has a definite place in its treatment.

REPORT OF A CASE

The following is the report of a case in which success has followed the resection of the lower œsophagus and cardia by the combined abdominal and thoracic routes:—

The patient, a man of 44, had suffered for nine months with increasing dysphagia and loss of weight. Œsophagoscopy was performed by Mr. T. E. Cawthorne and showed a carcinoma just above the level of the diaphragm. After a barium swallow a radiogram taken in the Trendelenburg position showed that the growth also involved the cardia. The patient, though thin and slightly dehydrated, was otherwise in good physical condition and was anxious to have any operation which might benefit him.

He was admitted to the hospital on April 4th, 1936, and was given daily 4–5 pints of fluid of high caloric value, consisting mainly of milk, eggs, cream, glucose, and olive oil, which he was able to swallow. On this diet he gained nearly 3 lb. in a week and his condition improved.

On April 10th an artificial pneumothorax was performed by Dr. A. Gilpin, 450 c.cm. of air being introduced into the left pleura. This was repeated on the 11th with 400 c.cm., on the 12th with 200 c.cm., and on the 16th with 400 c.cm. X rays then showed considerable collapse of the left lung. A further 400 c.cm. was introduced on the 19th.

Operation.—On April 20th, under avertin, intratracheal gas-and-oxygen and ether, administered by Dr. F. F. Cartwright, the abdomen was opened through a left paramedian incision extending well up into the angle between the xiphisternum and the left costal margin. The left coronary ligament was divided and the left lobe of the liver retracted. The growth was present around the cardiac orifice involving the œsophagus and an inch or so of the lesser curvature (Fig. 1). It was mobile and there were no secondary deposits in the liver. The peritoneal refection over the œsophagus was divided, a finger introduced into the hiatus in the diaphragm, and this was dilated. The growth could be felt in the lower part of the thoracic œsophagus, but this was also quite mobile. The stomach was freed on the greater curvature up to the diaphragm, and the upper part of the gastrohepatic omentum and the coronary artery divided. It was then clamped and cut across 3 in. from the pylorus, well below the growth. The lower part was closed and oversewn, and a gastrostomy catheter was inserted. The upper part was closed with a few silk sutures and a sterile rubber glove tied over the end. The gastrostomy was fixed to the parietal peritoneum and the abdomen closed, a drain being left to the stomach bed.

Although the patient's condition had not given cause for anxiety, definite improvement took place once the separation of the stomach was complete and while the abdomen was being closed. It was therefore decided to allow a short interval to elapse before opening the thorax. He was wrapped up warmly with blankets and given a blood transfusion. Twenty minutes later he was placed on the right side. An incision was made over the left ninth rib from the anterior axillary line to 3 in. from

FIG. 1.—The carcinomatous portion of the œsophagus and cardia.

the midline of the back, the rib resected throughout the length of the wound, and the pleura opened. The lung was almost completely collapsed and gave no trouble. The growth extended above the diaphragm for about 1 in. The pleura was incised and the finger inserted into the œsophageal hiatus from above. The diaphragm was divided by an incision running into the hiatus and the stomach was pulled through into the thorax. The pleura covering the œsophagus was incised upwards and the œsophagus was freed from its bed with the finger until it, with the attached stomach, could be delivered through the dorsal end of the chest wound. This necessitated freeing the œsophagus for 2 in. above the wound, to about the level of the seventh dorsal vertebra. The stripping took place easily and only a few vagal fibres required division. No ligatures were needed for the œsophageal bed. The diaphragm was closed by interrupted catgut sutures, and the mediastinal pleura was left unsutured. The chest wound was then closed, the œsophagus being fixed by sutures to the pleura, muscles, and skin at the posterior end of the wound. The left pleura was drained through the midaxillary line. When the wound had been sutured and the dressings applied, a clamp was placed across the œsophagus about ½ in. above the growth and it was divided distal to the clamp. Probably about 1 in. of œsophagus was present between the actual chest wall and the clamp and the latter was left on and incorporated in the dressing.

Progress.—Although the operation took over three hours, the patient stood it well. The drain from the pleura was connected to a continuous suction apparatus and gastrostomy feeds commenced a few hours after the operation. On the evening of the second day the temperature rose to 101·4° F., and a radiogram of the chest on the third day showed a few patches of consolidation in the base of the right lung. The left lung was then almost fully expanded. The patient coughed up semi-purulent sputum for some days but his temperature gradually settled. The patient was asked to expectorate his saliva until the clamp on the œsophageal stump had been removed. This was done on the third day and was followed by the discharge of a little mucopus. The drain from the abdomen was removed on the third day and from the left pleura on the sixth day. The latter only drained some 10 oz. of blood-stained fluid in all, but there can be no doubt that the continuous suction drainage aided the re-expansion of the left lung. The part of the œsophagus outside the chest wall gradually sloughed away, the wound being kept clean by syringing with eusol and giving the patient chloramine-T and port to drink. On the seventeenth day a rubber tube was inserted into the œsophageal fistula and connected to the gastrostomy tube, and the patient was allowed to take part of his feed by mouth (Fig. 2). Thereafter progress was rapid. The œsophageal opening gradually enlarged and at first a little leakage took place, but from the twenty-sixth day the patient took his diet, consisting of mince, eggs, fish, cereal, bread and butter, and potatoes entirely by mouth, with only occasional leakage. On May 23rd, the thirty-third day after operation, he was discharged from hospital.

Histological examination of the growth showed an adenocarcinoma. Two small glands at the cardiac orifice contained growth.

DISCUSSION

This is the third reported case in which a carcinoma of the lower œsophagus and cardia has been removed by the abdominal and thoracic routes (Zaajer,[4] Hedblom [5]). In Hedblom's case two preliminary thoracoplasties were performed and the œsophagus brought out through the midaxillary line. I believe that there is some advantage in bringing out the œsophagus further back since it then probably requires less displacement from its bed, there is less risk of sloughing, and by varying the incision more of the œsophagus can be resected. In this case the œsophagus was divided about ½ in. above the growth and another inch sloughed away outside the chest wall. If the vertebral ends of the seventh and eighth ribs had been resected still more of the œsophagus could have been removed. It is doubtful whether an œsophageal growth above the level of the eighth dorsal vertebra could be resected by this method, but where the growth is low, I believe a patient stands this procedure somewhat better than the total ablation of the œsophagus necessitating manipulation and stripping in the region of the aortic arch. If the cardia was not involved a preliminary laparotomy and gastrostomy could be performed some time before the thoracotomy.

FIG. 2.—The tube connecting the posterior œsophageal outlet with the gastrostomy tube. A shorter tube is now in use.

One criticism is the formation of a posterior œsophageal fistula. This is not so convenient for the patient as a cervical fistula, since he cannot reach it easily with his hands and help is required to insert the œsophageal tube, but as far as swallowing a semi-solid diet is concerned it appears to be quite satisfactory. As Grey Turner has pointed out, the passage of food along an artificial œsophagus is not determined solely by gravity: there is a "drive" downwards by the pharyngeal muscles, and in this case the respiratory movements also have a noticeable influence in forcing fluid along the connecting tube. The fact that the food travels by a somewhat circuitous route round the side of the chest to reach the gastrostomy does not appear to be a great disadvantage.

Preliminary artificial pneumothorax proved to be very satisfactory. It has been stated that it diminishes the operative shock and it may account for better pulmonary collapse rendering the lung smaller and less in the way.

The necessity of positive pressure anæsthesia ably administered and some form of suction drainage need not be enlarged upon, nor the value to the patient of a brief respite from surgical manipulation during a prolonged and severe operation.

Many other operations have been performed or suggested for carcinoma of the lower œsophagus. Where only the intra-abdominal position has been involved attempts have been made to pull down the thoracic œsophagus and anastomose it to the stomach or a loop of jejunum. There have been three successful results by this method (Voelcker,[6] Kümmel,[7] Bircher [8]), but it is obviously unsuitable where there is any involvement of the thoracic œsophagus.

Transpleural resection followed by the anastomosis of the œsophagus to the stomach pulled through into the thorax might appear to be an ideal, but it has not produced a success, and a perusal of the history of these operations gives the impression that œsophageal anastomoses, at least in the thorax, are doomed to failure.

Apart from these methods, suitable only for a carcinoma of the lower œsophagus, there remain those adopted by Torek,[9] Lilienthal,[10] and Grey Turner. Torek's method of total ablation of the thoracic œsophagus by the pleural and cervical routes has also produced successful cases in the hands of Eggers,[11] King, and Tudor Edwards, and appears to be that most generally applicable. Where, however, the growth is sufficiently low, the formation of a posterior œsophageal fistula after the resection, as in this case, may have the advantage of being a somewhat less severe operation.

My thanks are due to those colleagues who collaborated with me in the treatment of this case, and to Mr. F. W. Willway and Mr. S. O. Aylett for their assistance.

REFERENCES

1. Turner, G. Grey: THE LANCET, 1933, ii., 1315.
2. Edwards, A. Tudor: Proc. Roy. Soc. Med., 1935, xxix., 188.
3. King, E. S. J.: Brit. Jour. Surg., 1936, xxiii., 521.
4. Zaaijer, J. H.: Beitr. z. klin. Chir., 1913, lxxxiii., 419.
5. Hedblom, C. A.: Surg., Gyn., and Obst., 1922, xxxv., 284.
6. Voelcker: Verhandl. d. Deut. Gesellsch. f. Chir., 1908, xxxvii., 126.
7. Kümmell, H.: Beitr. z. klin. Chir., 1922, cxxvi., 264.
8. Bircher, E.: Kor.-Be. f. schwerz. Aerzte, 1918, xlviii., 467.
9. Torek, F.: Surg., Gyn., and Obst., 1913, xvi., 614.
10. Lilienthal, H.: Ann. of Surg., 1921, lxxiv., 259.
11. Eggers, C.: Surg., Gyn., and Obst., 1930, l., 630.

MEDICAL SOCIETIES

ROYAL COLLEGE OF SURGEONS OF ENGLAND AND THE ACADÉMIE DE CHIRURGIE, PARIS

ON July 6th members of the Académie de Chirurgie of Paris, on a visit to London arranged by the Royal College of Surgeons, attended a discussion at the College, at which Sir CUTHBERT WALLACE presided, on

Fractures of the Neck of the Femur

Mr. E. W. HEY GROVES (Bristol) said the usual classification of fractures of the neck of the femur was into (1) those near the joint which had in common the great liability to non-union, although the displacement of fragments was slight; and (2) those nearer the base of the femur which manifested great displacement but no difficulty in union. So long as efficient axial traction was put on the latter, they did not present any special problem. He would therefore discuss sub-capital and trans-cervical fractures, and their treatment. These fractures, which were almost entirely intracapsular, owed their peculiarity to two points: (1) that the head of the bone had a very poor blood-supply; (2) that it was very difficult to secure accurate apposition of the fragments and keep them fixed together. If this was not done, then, sooner or later, definite and permanent non-union and lameness would ensue. The period in question was 3 to 12 months, and the disability could be recognised by two points: first, the head of the bone, in comparison with the neighbouring structures, was dark in the skiagram, indicating necrosis, and, secondly, the neck of the bone had undergone absorption. For many years Whitman of New York had been fixing the body of the leg in the correct position in plaster. The two chief disadvantages of this were, that it was a long and tedious procedure, and a trial to old and feeble patients with little resistance, and, secondly, that at the end of three or four months, when the plaster was removed, if non-union had persisted, it was then more difficult to restore the patient to a sound condition. Moreover, even in the hands of enthusiasts, this method had not yielded more than 50 per cent. of successes.

While Whitman was developing his method, many other surgeons were using bone nails; either a square-shaped living graft driven in from the trochanter into the head, so involving much destruction of cancellous tissue of the head and neck, or using a beef-bone nail which could be driven into the trochanter. During the last six years the situation had been dominated by Smith-Petersen's method of using a three-flange nail. Though this looked somewhat massive in the skiagram, it was really a delicate affair, consisting of thre every thin axially placed metal plates, set at an angle of 120°. The plates could be driven in without preliminary boring, and the fragments were firmly held together, allowing of no rotation. A serious aspect was the need of a somewhat large incision, having regard to the age of many of the patients. Sven Johanssen used a wire, and his method was popular. But, even in the hands of experts, it was tedious to carry out, needing an operation of one to two hours.

Cases of permanent non-union were usually easily recognised; the head of the bone was partly necrotic, and the neck had disappeared, so that rejoining the bone was impossible. There was then a choice of three procedures: the reconstructive operation of Whitman, or the osteotomy of Lorenz, or that of Schanz. Whitman's operation was only suitable for comparatively robust patients. In the Schanz operation a wedge was removed from the base of the great trochanter, the apex of the wedge lying over the small trochanter. It was claimed for this—and with some truth—that it had in some cases finally brought about union where the vitality of the soft parts had almost been destroyed.

Mr. R. WATSON JONES (Liverpool) showed a film of his operation. Since Smith-Petersen's method was introduced, the mortality from fracture of the neck of the femur had, he said, been greatly reduced, and the incidence of bone union greatly increased. He had himself operated upon 64 such cases in the last five years with a mortality of 6 per cent., a figure much lower than could be secured by other methods. Bony consolidation was secured in 91 per cent. It had been said that the operation was difficult for the average surgeon, and that the failures of this operation were much worse than failures in the Whitman plaster procedure. That might be true; surgeons had probably seen errors of insertion, and disasters which followed when the surgeon's aseptic technique was not all it ought to have been, resulting in septic arthritis or worse; but surely it could not be seriously contended that because a procedure was difficult it should be abandoned. Instead of lowering the standard below the ideal, the aim should be to raise the technique to the necessary standard. Whether an operation of this type would remain the method of choice remained to be seen, but it must be determined by the soundness

of the technique, not by whether the operation was easy or difficult.

Mr. GWYNNE WILLIAMS (U.C.H.) expressed agreement. He had himself treated 31 cases of unimpacted fracture of the neck of the femur by the Smith-Petersen open operation. The average age of his patients was 65, the oldest being 88. Six of them died—two of pulmonary embolism on the tenth day, one a year after the operation from infection with *B. welchii*, one of septicæmia 14 days after redriving a nail which had slipped out of the head, one from erysipelas following a sore heel three months after the operation, and one from pyelonephritis a month after operation. The operation involved no great loss of blood, and there had been surprisingly little shock. No splinting was needed, and three weeks after the operation the patient could sit up in a chair. The weight of the body should not be put on the limb until three months had elapsed. Of the 25 cases still alive out of the 31, three failed to unite. One of them was a fracture 70 days old, in which there was much wasting of the neck, and the nail was driven into the acetabulum; in another the head and neck wasted away after the operation, while the head of the third case was so hard that the pin could not be driven into it. These 22 cases which had united could be contrasted with 30 cases treated by Whitman's manipulation and plaster, of which only 7 showed union by bone. Moreover, of the 22 cases treated by the Smith-Petersen operation and which had resulted in union, 5 had been fractured for more than 100 days (one 210 days). The Smith-Petersen nail had revolutionised the treatment, and it remained for surgeons to decide upon the best way to put the nail in. That must be ascertained by results.

Mr. ERIC LLOYD (Royal Northern) submitted that the lateral approach was preferable, as there was then less shock and hæmorrhage. No operation gave adequate exposure. The ideal was to be guided by skiagrams taken in two planes. Originally, Smith-Petersen did the operation through a large incision; he now used a smaller one, working under X ray control. There was always the risk of sepsis, and in these old and enfeebled patients even mild infection of a small hæmatoma might prove disastrous. Wires gave great anxiety, and he had planned an aiming device of mathematical precision which obviated their use. This method needed special apparatus, and a special personnel. He only used it for medial or intracapsular fractures; pertrochanteric cases did not need it, as they united well. Patients should be watched for at least a year after the operation; it was too soon for him to give definitive figures. Since September, 1934, however, he had operated upon 31 patients by the lateral approach—10 by methods involving the use of wires, 21 by a director in its present form. He had only lost 2 cases.

Mr. HARRY PLATT (Manchester) said surgeons should ask themselves whether the conservative treatment of fracture of the neck of the femur of the intracapsular type had vanished from surgical procedure. It was only fair to say of the Whitman method that it had not been tried in any clinic with the advantages of X ray control of the fracture in two planes. If, before the application of the plaster, proof of the reduction of the fracture in two planes were brought forward, a higher proportion of bony unions would be obtained. He agreed that the new method of nailing fractures had revolutionised treatment. His own experience of nailing by the open method had been limited, to date, to 30 cases, with two deaths—one from pulmonary embolus, the other developed delirium tremens. On the whole his experience had been gratifying, but the difficulties and drawbacks must be faced. Pinning of the fracture after exposure of the area by operation was a blind procedure, especially in fractures high up, of the sub-capital type. The subcutaneous method would, he thought, be the method of choice in the future, applied to an even wider range of cases and with even less risk than now. He still considered that the method of Sven Johanssen, especially as modified by King of Melbourne, was reasonable. It was dangerous to permit a patient to put the weight of his body on the repaired limb sooner than the third month after operation. There was as yet little information as to the interval after which the Smith-Petersen nail became loose. The modern larger nail soon seemed to become loose and lie in a hole, and he showed a skiagram which clearly revealed the track of the nail long after the nail had been withdrawn. It was always advisable to persuade the patient to have the nail removed.

Mr. HEY GROVES, in reply, said it was obvious that however skilfully performed an operation requiring an incision several inches in length and lasting 30 to 60 minutes must involve risk to old and feeble patients. There still remained the problem what procedure the surgeon would advise in the case of a relative of his own of (say) 70 years of age, who had but a feeble resistance.

Research on Surgical Problems

Dr. JOHN BEATTIE, conservator of the Hunterian Museum, followed with an address, illustrated by slides, on recent work carried out in the College laboratories on certain surgical problems. Light was thrown on the three phases in surgical shock by studying the blood pressure from the onset of shock. The pressure fell and remained low for a short time, although there might be an attempt to rise. Nervous impulses of a pain character during that time failed to produce the normal rise in pressure owing to the loss of fluid into the muscles of the traumatised limb. Hence the first fall in blood pressure in trauma was due to loss of fluid. The period of recovery might last 30 minutes, followed by a gradual fall in pressure, terminating in death. Mr. L. O'Shaughnessy and Dr. D. Slome had concluded that the loss of fluid seen in the first phase was not itself the cause of death, which was rather due to something happening in the second period, probably associated with impulses which passed along the sympathetic nerves. As the pressure fell, the number of these impulses was increased. But this gave no clue to the cause of death. Possibly these impulses produced in the central nervous system a change which was irreversible, the blood pressure continuing to fall until it reached a point at which death was inevitable. An animal shocked by traumatising the hind limb might die in 2½ hours; if the spinal cord was blocked by novocaine the blood pressure remained up and the animal was prevented from passing into a condition of shock. Cross-circulation experiments confirmed the conclusion that the lethal factor in shock was abnormal nerve impulses. Mr. G. E. Knight and Dr. Slome had shown that death in intestinal strangulation was due to toxin formation. After a certain period of strangulation—varying from 6 to 22 hours—it was possible to obtain this toxin in sufficient quantities to kill an animal. Mr. T. H. Bentley was investigating the effect of growing

epithelium on the growth of fibrous tissue lying beneath it. Work had also been done on the hypothalamus, and the effect of its stimulation on gastric tonus.

INSTITUTE OF CHILD PSYCHOLOGY

AT a meeting held on July 2nd the chair was taken by Prof. H. R. HAMLEY, and Dr. CHARLOTTE BÜHLER of Vienna opened a discussion on the meaning of

Neurosis in the Child

She said that Adler had first used the term "the neurosis" as characterising a definite attitude to life, common to all who suffered from the many varieties. It was a fixed unconscious reaction with a substitute tendency, the real aim being avoided. With her test methods she could, she claimed, distinguish between neurotic behaviour on the one hand and critical periods in normal maturation, slow maturation, feeble-mindedness, primary deficiency, and neglect on the other. She illustrated this point by cases of obstinacy and jealousy. About 85 per cent. of all children passed through an obstinacy period; in normal children the necessary period of refusal should not appear after four. The neurotic child avoided contact, would not even say "No," turned away, when asked to do something did something else instead, did things to annoy and watched how people reacted, treated objects badly, and showed prolonged and rather stereotyped bad behaviour, lasting after the fourth year. He avoided every kind of imitation most definitely.

Primary deficiency was of various kinds. It might be inability to do certain things, producing irritation; a child who moved very slowly might be annoyed at his inability to do things which he fully understood, and so became averse from work. Such a child showed no negativism; the deficiency was a dependent element and could not appear by itself. It could not have a neurotic origin because it could not arise from intention. A neurotic, by contrast, showed social behaviour much below his age and produced an indirect outlet and not a direct reaction. In cases where tests revealed critical development, emotional trouble, or minor deficiency, treatment should be educational. If there was neurotic reaction the patient belonged to the pathologist.

Dr. MARGARET LOWENFELD spoke of the difference between children and adults. It was false, she said, to differentiate unsuccessful children into sick, criminal or delinquent, educational failures, and psychoneurotic. The Institute of Child Psychology dealt with any child who failed to be happy from any of these four standpoints. The neurotic child was not a special type. Educationists regarded as "abnormal" any child who did not fit the particular type of school he was at. The "problem child" was one whose behaviour contravened certain social standards. The reasons for which a child was brought to see a physician varied in different social strata. Children were presented to the doctor to have them adjusted to some background created by the parents. The germ of a child could manifest itself in four ways: the production of the physical frame, the possibility of movement, intellectual growth, and emotional growth. All these had some teleological end. Life was biologically intended to be creative, and this activity constituted a rough measuring stick. A failure to achieve this biological end might be due to past disorder in the germ, to remediable errors in environment, or to emotional factors. At present such a residuary diagnosis was all that could be obtained. The barriers between the various artificial groups must be broken down. A neurosis in children might tentatively be defined as a condition in which it was found that the predominant factor was derived from the emotional nature.

Dr. D. W. WINNICOTT said that his experience as a pædiatrist made it difficult to distinguish normal from neurotic children; he preferred the vague term "finding life difficult." The most important point arising out of psycho-analytic research was the discovery of the intensity of infantile and child feeling. Adults were incapable of recapturing this intensity; they would be torn to shreds if they could. Normality depended on forgetting. Adults expected babies to be like dolls, and were surprised at their individuality. The psychological activities of the young human included a constant testing and retesting of the inner and outer worlds. The inner (phantasy) world was helped by the satisfactions and values supplied by the outer world, and the outer world was seen more richly because of the phantasy from the inner world. Typical early human feelings were love, longing, rage, guilt, sadness, anxiety, fear, happiness, and the urge to put right in external reality what became harmed in phantasy. Every normal baby experienced all these emotions and was very much at their mercy. It was abnormal when the symptoms were of a kind that produced a hostile or unfriendly environment; or when they caused bodily harm (e.g., refusing food, or constipation); if play was inhibited; or if the child was unable to show neurotic symptoms. When play was inhibited, or no playmates could be obtained, nothing of the nature of reparation or restitution could be attempted to deal with hopelessness in regard to phantasy, and no aggression could be expressed. In his attempt to deal with internal stress the child ought to be able to display symptoms such as dependence, sulking, rage, bed-wetting, restlessness, digestive disturbances, and minor illnesses. Each method worked in its own way and only in a popular sense could a child be called neurotic if he manifested such symptoms. The term neurosis expressed the popular fallacy that neurotic symptoms were in themselves abnormal. There was a place for the term, to describe tendencies and symptoms that had no physical basis, but the psychologist could only use it if he was clear that children normally employed neurotic symptoms.

Dr. ETHEL DUKES remarked on the frequency of spontaneous recovery and expressed appreciation of Dr. Bühler's testing methods. The Institute had always stressed the intensity of feeling in childhood and sought to get back to the child himself.

Prof. MILLAIS CULPIN agreed with Dr. Lowenfeld's definition of neurosis. The problem of the influence of emotion had occupied mankind for 2000 years, but neurosis was a modern product. He hated the word. It had been used to include dysentery, lead colic, epilepsy, asthma, and dementia præcox. Still worse was the word "neurotic," a mixture of false metaphysics, pseudo-psychology, and moral condemnation. The currency of the word marked one of the dark ages in medicine. He himself shirked dealing with children and greatly admired those who did. He thought neurosis, or benign psychosis, in children was not very different from the same disorder in adults. The analytical examination of the adult gave great knowledge of what went on in the mind of the child. Living in an uncertain world,

the child often found it a great relief to turn to a sphere where two and two always made four, or to toy trains which always kept on the rails. Mathematicians were usually people who avoided personal contacts. The best work in the world was done by neurotic persons, who had to get out of the rut. The key to handling a child from the earliest days was to avoid emotional emphasis and to "keep off his back" as much as possible. Excretory and sexual education were matters often associated with immense emotional emphasis. Information in sex matters could look after itself, provided emotion were avoided.

Dr. DORIS ODLUM expressed agreement with the importance of emotional disharmony and objection to the word neurosis, which confused everybody, lay and medical alike. She had suggested the word dysthymia.[1] Attention had originally been drawn to emotional disharmony by symptoms related to the autonomic nervous system, and from this point of view the term neurosis was justified. Nevertheless it seemed a thousand pities not to have the courage to break away from custom and show clearly that an emotional disturbance was what was really under discussion.

Prof. E. M. LIGON (New York) thought parents would be quite as concerned at having their children called dysthymic as neurotic; the question was: did anyone know what they were talking about under either term? Dr. Bühler's distinction between different types was of the greatest importance.

Mr. R. J. BARTLETT said he had been impressed by the importance of the will in the life of the child. There was a time when it was good for the child to say "No. I won't." It was difficult to draw the line between emotion, conation, and volition. The child must not have his own way completely; he must fit into the social environment and find restrictions against which to use his will up to a point.

Dr. GRACE CALVER spoke of the child who was trying to react to something within himself; the neurotic went a stage further and suffered from a conflict of two repressed tendencies which came out in some altered form. He was always a solitary individual, whereas the first type was not. Dr. Bühler's tests showed up these reactions very clearly, and worked well with deaf-and-dumb children.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

ANNUAL MEETING AT FOLKESTONE

THE ninety-fifth annual meeting of the Association took place at Leas Cliff Hall, Folkestone, on July 1st, 2nd, and 3rd, under the presidency of Dr. M. ABDY COLLINS.

The president presented the Gaskell prize to Dr. S. W. Hardwick, of Tooting Bec Hospital, and the prize dissertation award to Dr. D. K. Bruce, of Storthes Hall Mental Hospital. The president delivered an address on the Law and the Present Position of Psychiatry, in which he traced the history of the specialty, and dealt with recent research and present tendencies. The special subject for the annual meeting was the

Manic-depressive Psychoses

Dr. AUBREY J. LEWIS, dealing with the prognosis of these psychoses, said that prognosis was often conceived as the natural history of disease, or the course which it would follow if it was not interfered with. Treatment was valued for the good modification which it produced in this so-called natural order of events. It might expedite the process of recovery, or it might bring about recovery which would not otherwise have occurred; or it might lessen the harm wrought by the disease. Stated differently, the efficacy of treatment was assessed by the changes produced in the duration of the illness and the form it took. In the case of such a disease as malaria this conception of prognosis and this use of it for assessing the treatment could be demonstrated. But in psychiatry one was not, as a rule, dealing with parasites, bacteria, or other exogenous agents which lived and exerted their influence in a definite order of time and place. Causes of mental illness had no sequence or constancy. Those external to the patient were variable and manifold, as much so as the pattern of daily life, and those intrinsic in the patient were seldom capable of forcing their way and becoming manifest as illness. Another important point to remember in mental disease was the uncertainty as to the criteria of recovery or improvement. Individual studies were the only ones which could take all the modifying and significant factors into account; but with them there was a risk of generalising from an exceptional happening or from a plausible explanation which was really deceptive. Larger, statistically sufficient data were subject to directly opposite objections and advantages; but it was possible to collect a manageable number of cases which had been well worked over, and to continue to follow them up for years. This was a preferable method to that of dealing with old case material as recorded by other psychiatrists in the light of former clinical interests, which differed from present ones. Dr. Lewis gave in detail his findings in 61 manic-depressive cases, which he had followed up for eight years, and compared these findings with those of other investigators.

Dr. P. K. MCCOWAN referred to work done by himself in association with Mr. J. H. Quastel, D.Sc., on the hyperglycæmic index in psychotic patients.[1] Since their paper was published, Dr. Quastel and he had examined some hundreds of further cases of manic-depressive insanity, and had found no reason to modify their former statements. When, in the course of the illness, the blood-sugar fell, it was of favourable prognostic import, and the value of the index was seen particularly in cases showing no striking objective evidence of depression and who denied depression and wished to be discharged. Should the index of such a patient remain high, his or her discharge would be dangerous. In a certain number of cases, particularly involutional and senile melancholics—in the absence of menstruation or toxæmia or glandular dysfunction—there was a persistently low hyperglycæmic index, and this was regarded as showing a large hysterical element. In benign stupor the index was low, in katatonic stupor it was high in a general way.

Dr. H. TÓMASSON (Reikjavik, Iceland) dealt with efforts to treat cases of manic-depressive psychosis. He said that in a group of phasic manic-depressive patients a humoral instability was found to exist which was characterised by abnormal fluctuations in the calcium level of the serum. At the same time fluctuations had been found in the serum concentration of sodium, but in the opposite direction to the calcium values—i.e., with a general tendency to values lower than in normals. Fluctuations had

[1] THE LANCET, 1932, ii., 754.

[1] See THE LANCET, 1931, ii., 734.

also been found in the serum-potassium concentration, especially in depressed patients, though in these latter it was less constant. Various tests pointed to a probability of there being in manic-depressive cases a diminished peripheral innervation. The humoral and nervous deviations found in these patients were the opposite of those found in patients with tetany. To increase the peripheral parasympathetic innervation, acetylcholine was used by the speaker, ephedrine being used to increase the peripheral sympathetic innervation. Both these substances, besides influencing the autonomic system, appeared to diminish the calcium in the serum and to increase the sodium. He had, so far, submitted only manic-depressive patients to this treatment. In these the psychotic phase passed off in a much shorter time than would otherwise be expected. In 13 cases of severe mania who were treated privately, the attacks averaged in duration 43 days, as contrasted with the average duration of 144 days for previous attacks in the same patients. In four cases to whom no medical treatment was given—for the sake of control—the stay in mental hospital was 149 days. Dr. Tómasson submitted that these results encouraged a hopeful view of this biochemical and neurophysiological approach to the problem of dealing with manic-depressive psychoses.

PROLONGED NARCOSIS

Dr. T. J. HENNELLY dealt with the subject of prolonged narcosis in the manic-depressive psychoses. Anyone carrying out this treatment must be fully conscious of the possible dangers associated with the use of barbiturate preparations, especially in view of the fact that these psychoses were in themselves non-fatal conditions. Prolonged narcosis was a valuable form of treatment if toxic symptoms could be eliminated. The toxic symptoms resulting from Somnifaine were referable to the action of the drug on the peripheral and central nervous systems, and to an upset of the carbohydrate metabolism generally. The important clinical symptoms, ketosis, vomiting, and so forth, when linked up with in-vitro experiments on brain and liver slices, showed that narcotics exerted a profound inhibitory effect on the oxidation by brain and liver of substances which were important in carbohydrate metabolism—i.e., glucose, lactic acid, and pyruvic acid. This fact led to the idea that a corrective therapy was possible, and there had been evolved in the Cardiff City Mental Hospital the glucose-insulin treatment for those under prolonged narcosis. This represented a great advance. The treatment exerted a beneficial effect by ensuring prolonged rest, during which there occurred a lessening of the patient's emotional tension and an inhibition of his faulty modes of thought and action. From the clinical standpoint, the management of the dosage was most important, and really skilled nursing was essential. At the Cardiff City Mental Hospital all the patients of this type were in the same wing and an experienced sister was in charge; patients were on low beds and the treatment was carried out in a darkened single room; it had been found that if patients were kept on an open balcony, more somnifaine was needed for the narcosis. The quantity used at Cardiff was 4 c.cm. daily. The treatment should be carried out only by those who were familiar with the action of the drug; the diet during the treatment should be fluid. Daily examination of the urine—a morning specimen—was important, as also was gaining the confidence of the patient. If acetonuria was not under control, treatment was deferred and there was then small likelihood of toxic symptoms supervening; glucose should be given throughout the course. He concluded by giving an analysis of 133 cases treated at Cardiff in this way.

Dr. R. STRÖM-OLSEN, while in general agreement with Dr. Hennelly, said he did not find it convenient to adhere to a fixed dosage. Some patients tolerated the drug better than others did. The greatest benefit was seen in patients who showed affective disturbances. Many explanations of the rationale of the treatment had been submitted, not only psychological but also biochemical. In view of Dr. Tómasson's work it would be very important if a correlation could be established between the changes in the electrolytes in manic-depressive states and the effect of narcotics in countering them.

Dr. D. N. PARFITT spoke about 20 cases of mania who entered Warwick County Mental Hospital between 1931 and 1933. They were divided into two groups, the first (13 cases) characterised by a history of precipitating factors and by the presence of confusion, and the second (7 cases) were so-called "pure" manias. The first or confusional group could be successfully treated by means of sedatives and by eliminative measures directed to the skin, bowels, and kidneys; but treatment of cases in the second group he had found to be unsatisfactory. The average stay in the hospital of the 13 confusional cases was 4 months; that of 6 of the 7 "pure" cases who were discharged was 14 months (the other still remained as a "chronic" patient). Of the 6 "pure" cases discharged, 2 had returned with a recurrence and another had committed suicide. Treatment was the same for the two groups. He considered that, notwithstanding the Cardiff modification, the narcosis treatment remained a dangerous one, though in successful cases the results were excellent. He was not surprised that at Cardiff City Mental Hospital the dose of somnifaine had been reduced to 4 c.cm. daily, but he could not understand how a case of mania was kept asleep under such a small dose. In his own cases every means was taken to eradicate septic foci, but there was no detectable benefit to the mental condition.

Dr. G. W. T. FLEMING thought it was possible that enough care was not taken over the production of prolonged narcosis; it should not be too lightly attempted. American physicians had used hæmatoporphyrine for depressive cases.

Dr. A. A. PETRIE said that treatment by prolonged narcosis consisted in putting toxic substances into people who were already toxic. The use of glucose and insulin in obviously toxic cases, including the manic-depressive type, was an important advance; he had seen definite improvement in the confusion and the toxic state, so that the residual condition could be dealt with.

HEREDITARY ASPECT

Dr. E. SLATER spoke on the hereditary aspect of manic-depressive psychoses. He said that the theory of polymorphism — the theory that all forms of psychiatric abnormality were dependent on a common factor — still lingered on in some quarters. There must be an examination of single clinical syndromes. Modern genetic research in psychiatry had shown that a high degree of specificity existed for the inheritance of psychiatric abnormalities, so long as they were accurately defined. Investigations into the heredity of manic-depressive insanity confirmed the specificity of the hereditary basis for this condition, and certain facts suggested that it was of a simple dominant character. The practical difficulties of investigation, the influence of the

environment and of probable genetic modifying factors could explain the difference between the findings and theoretical expectation. Investigation concerning the relatives of manic-depressives disclosed no undue incidence of mental defectives. The work of Duncan, Penrose, and Turnbull suggested a close relationship between manic-depressive insanity and mental defect, but the speaker considered the conclusions of those workers to be erroneous. Luxenburger had shown by his investigations that there was a higher incidence of manic-depressive insanity in the socially most successful classes; while Juda had demonstrated a lower incidence of manic-depressive insanity and of related types of psychopathy in a group of defective families than in a control group of normals. It seemed probable that manic-depressive hereditary elements had a positive association with social success.

Dr. GLEN DUNCAN spoke on mental deficiency and manic-depressive insanity. He gave a survey of patients in Severalls Mental Hospital, which showed that out of 287 cases of manic-depressive insanity, 46 per cent. were subnormal in mental ability. A comparison of the subnormal with the normal did not indicate any difference in the nature of their manic-depressive symptoms, nor did he find any greater tendency to dementia. In the subnormal patients, hallucinations were more commonly present, and the first certification was at a somewhat earlier age. There was a close relation between mental defect and the frequency of mania as the predominating mood disorder. In the feeble-minded, mania was predominant nearly four times as frequently as melancholia. The association was also demonstrated in a group of 52 patients who showed emotional instability not amounting to manic-depressive insanity; nearly all were feeble-minded. The incidence of stigmata of degeneration varied directly with the degree of mental defect. In the series now being discussed, stigmata were present in 9 per cent. of the normal, 13 per cent. of the dull, and 50 per cent. of the feeble-minded manic-depressive patients of the male sex. Evidence of hereditary influence in the incidence of mental defect or disorder among the sibs and parents of a psychotic was much greater in manic-depressive insanity than in any other psychosis. This incidence was higher in the subnormal than in the normal group. The imbeciles seen in a mental hospital were usually unstable. The evidence collected in the survey supported the view that manic-depressive insanity and its milder emotional instability were ætiologically more closely associated with primary mental deficiency than with other constitutional psychoses.

IRRITABILITY AS A SYMPTOM

Prof. W. MAYER-GROSS said that irritability was a very common phenomenon in more or less normal states of mind—in fatigue, alcoholic drunkenness, in premenstrual phases, mountain-sickness, and so forth—and, on the other hand, it was known as a symptom in several psychic illnesses, such as neurasthenia, post-traumatic and other forms of organic impairment, and in the subjects of epilepsy. Something was now known concerning the nature of irritability and in what conditions it occurred, and this should lead to an enlargement of the understanding of the dynamics of the morbid effective happenings characterising manic-depressive phases.

Dr. A. GUIRDHAM described some simple psychological data in melancholia, paying particular attention to the Rorschach test, which he described in detail, indicating the conditions of mind defect shown by patients' preferences and images.

PERIODICITY: NOMENCLATURE

Dr. S. M. COLEMAN spoke of periodicity and its relation to psychopathology. He stressed periodicity as the preferred mood reaction. The nervous system showed the same inherent preference for periodic or rhythmic reaction, and there was a tendency to normal mood swings. Normal behaviour with economic working and maximum efficiency struck a mean between those two. Usually in manic-depressive insanity there had been some disappointment in the love-life as a precipitating and exciting factor.

Dr. HELEN BOYLE thought that there was real need for a more accurate description of the meaning of manic-depressive insanity. In these discussions some included involutional cases and psychoneurotic cases, while some included, and others excluded, arterio-sclerotic conditions. Dr. Mapother had declared that the difficulty about all the psychoses at present was that there were not available sufficient data on which to name them, and so all that could be done was to talk about syndromes and symptoms. She thought it would be worth while to consider more fully the relation between a large group of manic-depressive or cyclothymic states and endocrine—especially thyroid gland—disturbances, which latter were so closely allied with the whole vegetative nervous system.

THE ANNUAL DINNER

The annual dinner of the association was held on July 1st at the Royal Pavilion Hotel, Folkestone. Dr. M. A. Collins, president for 1936–37, who has just retired from Chartham to become an inspector of the Ministry of Pensions, was in the chair. There was an attendance of over 120 members and guests. The Mayor of Folkestone, prevented from attending by illness, was represented by Alderman Stainer.—Dr. J. H. Macdonald (Hawkhead, Glasgow), proposing "The Ministry of Health," spoke of the aims common to the Ministry and the Association, the only real capital in this world being mental health and brain power. It was, he felt, a matter for regret that local authorities were not as yet fully carrying out the recommendations of the Ministry and the Board of Control in dealing with mental defect and mental disorder.—Sir George Chrystal, deputising for Sir Kingsley Wood, who had been prevented from coming, replied to the toast. The association, he said, did valuable work in bringing together psychiatrists, medical superintendents, and medical officers of mental hospitals, in stimulating initiative and research, and in keeping psychiatry in its proper place in the main stream of medical art and science. He saw reason to hope that we might soon get a reorganisation of the mental health services. He was aware of a real disposition on all sides towards progress, which he trusted would not be jeopardised by quibbling over matters of form which were not matters of substance.—Dr. J. Noel Sergeant proposed "The Visitors," reply being made by Alderman Stainer, the Bishop of Dover, and Lieut.-Colonel J. A. Purefoy Robinson.—Sir Laurence Brock, chairman of the Board of Control, proposed "The R.M.P.A." Its work was specially valuable, he thought, in keeping up interest among the younger members and preventing them from dropping into routine; it also afforded doctors an opportunity of educating public opinion. Our mental hospital buildings for the most part were good; our mental nurses were the best in Europe; we had excellent doctors—but many of our mental hospitals were seriously understaffed. What might not be achieved if there were adequate facilities for study and research? No official department could influence the public, but the doctors were in a position to do so.—The President, in reply, said how glad he was to feel that the Board appreciated the work of the association. The Board helped them in every possible way. The association was progressing and one of its chief objects was to give opportunities and assistance to the younger members.

REVIEWS AND NOTICES OF BOOKS

British Encyclopædia of Medical Practice

Vol. I. By Various Authors. Under the general editorship of Sir HUMPHRY ROLLESTON, Bart., G.C.V.O., K.C.B., M.D., D.Sc., Emeritus Regius Professor of Physic, Cambridge; sometime President of the Royal College of Physicians of London. London: Butterworth and Co., Ltd. 1936. Pp. 742. 35*s*. (in Great Britain).

THE first of the nine volumes of this ambitious work, which attempts to cover the whole field of medicine and the special departments, begins with a discussion of abdominal pain and gets as far as appendicitis. In his admirable introduction, the editor summarises the history of medicine which he describes as a branch of biology. A criticism often levelled at alphabetical systems of medicine is that the first volume is apt to become out of date before the last one appears. The editor explains that, in order to avoid this, supplementary volumes are to be issued to this encyclopædia, the aim of which is to be of practical help in diagnosis and treatment. Irrelevant matter has therefore been as far as possible excluded and historical and pathological detail reduced to a minimum.

This first volume contains about 50 articles and twice that number of illustrations. On the medical side, among many articles of interest, is one by Dr. A. M. Cooke on alkalosis occurring in the alkaline treatment of peptic ulcer, a condition which, he maintains, is less rare than is commonly supposed. Drs. John F. Wilkinson and L. E. H. Whitby write exhaustively on the anæmias and Dr. Arthur F. Hurst contributes articles on achalasia, aerophagy, achlorhydria, and anorexia nervosa. In the treatment of this last difficult condition he wisely condemns all elaborate methods such as special or graduated dieting, gastric lavage, and rectal feeding, preferring to rely on a change of environment combined with patience and persuasion. Another important medical article is the one on diseases of the adrenal gland by Drs. Otto Leyton and S. Levy Simpson, which includes a detailed account of the treatment of adrenal hypoplasia. On the surgical side, Mr. John Morley writes on the interpretation of abdominal pain, and also on the diagnosis of acute abdominal emergencies, including appendicitis. Sir David Wilkie's article on appendicitis covers some of the same ground, but includes treatment. Mr. W. B. Gabriel writes on the surgery of the anus, and Messrs. G. H. Colt and Philip Reading on amputation. The ear, nose, and throat department is represented by articles on adenoids and the accessory nasal sinuses by Mr. Lionel Colledge. In the sphere of obstetrics and gynæcology, Mr. Eardley Holland discusses pathological amenorrhœa and the treatment of those cases due to endocrine lesions by means of ovarian hormones. Writing of abortion, Mr. D. W. Roy reminds us that the increase of illegal abortion has seriously increased the maternal mortality-rate, since fatal septic cases following abortion are included in the published statistics. A third article in this group is one on antenatal care by Prof. F. J. Browne, to which a note by Mr. V. B. Green-Armytage on antenatal care in the tropics has been added. Two rare dermatological conditions, acanthosis nigricans and angio-keratoma, are described by Sir Ernest Graham-Little. Dr. A. C. Roxburgh writes on acne and Dr. H. W. Barber on alopecia. There are several articles on tropical medicine. Sir Leonard Rogers, F.R.S., writes on amœbiasis and ainhum, and Dr. H. H. Scott on ackee-poisoning (the cure for which is plenty of alcohol). The article on ankylostomiasis was contributed by the late Lieut.-Colonel Hugh Acton. In pædiatrics, Dr. Stanley G. Graham discusses our old friends acidosis and alkalosis. Finally, there are three articles by pathologists: one by Dr. A. G. Gibson on amyloid disease, one by Dr. W. E. Cooke on anthracosis, and one by Dr. E. ff. Creed on anthrax. The volume is well bound and handsomely produced.

Vascular Disorders of the Limbs

By Sir THOMAS LEWIS, C.B.E., F.R.S., M.D., D.Sc., F.R.C.P., Physician in charge of the Department of Clinical Research, University College Hospital. London: Macmillan and Co., Ltd. 1936. Pp. 111. 6*s*. 6*d*.

THIS book has been written primarily for practitioners and students, presenting in simple terms a summary of work which has involved many years of intricate and painstaking clinical research. Since details of the original observations are recorded in Lewis's other books and in papers which have appeared from time to time in *Heart* and *Clinical Science*, only the conclusions drawn from them are now set forth and discussed with special reference to their practical applications.

The early chapters describe the methods to be used in examining the peripheral circulation, the effects of arterial occlusion in general, and the special features of obstruction by embolism, external pressure, and disease of the vessel walls. These methods are not of the laboratory but of the bedside; yet, although they may be carried out by the busy practitioner without elaborate apparatus, they introduce into clinical observation a degree of accuracy comparable to that of physiological experiment. In the design and execution of these methods Lewis is an acknowledged master, and fortunately for his disciples he is able to express his ideas and his directions not only with clarity but also with exemplary economy of words. In the section dealing with Volkmann's contracture he omits to say whether he agrees with the commonly accepted belief that this contracture can follow venous obstruction alone; its occurrence in spite of the presence of pulsation in the main arteries of the limb is rightly stressed.

The later chapters supply a careful analysis of the many conditions associated with changes in the colour and temperature of the skin which are commonly supposed to originate in some abnormality of the vasomotor nerves. They constitute a problem of such difficulty that it is tempting to accept a theory which seems at first sight to account for the phenomena on a nervous basis, but Sir Thomas's chief contribution towards its solution is his convincing demonstration that many of them are the result of a peculiar response of the vessels themselves to environmental stimuli. This applies to Raynaud's disease, scleroderma, the effects of local injury or vibration, acrocyanosis, erythrocyanosis, and erythralgia; and even when disease is present in the central or peripheral nervous systems the so-called "trophic and vasomotor" manifestations may be explained without postulating any disturbance of the vasomotor nerves, of which there is, in fact, no evidence.

Despite its modest size this book makes a wide survey of many aspects of peripheral vascular disease,

and the opinions expressed on surgical treatment are sound, though we cannot agree that bilateral cervico-thoracic ganglionectomy results in facial disfigurement. On the contrary, in many cases of Raynaud's disease after ganglionectomy improvement in the skin of the face is very noticeable. The comments on cervical rib and on crutch pressure are perhaps rather less convincing than the rest of the work. This is a book which should be read and re-read in order to get the best out of it, for it will then serve to promote greater accuracy in clinical observation and a more thoughtful and diligent search after truth.

The Anæmias

Second edition. By JANET M. VAUGHAN, D.M. Oxon., M.R.C.P. Lond., Assistant in Clinical Pathology, British Postgraduate Medical School, London. With notes on *Normal and Pathological Erythropoiesis* by HUBERT M. TURNBULL, D.M. Oxon., F.R.C.P., Director of the Bernhard Baron Institute of the London Hospital. London: Humphrey Milford, Oxford University Press. 1936. Pp. 309. 12*s*. 6*d*.

Dr. Janet Vaughan and Prof. H. M. Turnbull have placed hæmatologists still further in their debt by producing a second edition of their monograph on the anæmias. The text is now some fifty pages longer and four coloured plates have been added. No outstanding discoveries have been made since the last edition and until more is known about the intimate nature of leukæmia and allied proliferative lesions of the blood-forming organs it is difficult to see any field for great development. The general arrangement of the book remains the same, but all sections show signs of careful revision, especially the introductory chapter on erythropoiesis and the hæmatinic factors. The most important recent work of the authors has been concerned with the anæmias associated with diseases of the skeleton and they have raised leuco-erythroblastic anæmia to the dignity of an accepted morbid process. There is perhaps some risk of over-simplification in attempting to relate nearly all the hyperchromic anæmias to deficiency of pernicious anæmia factor, the leuco-erythroblastic process, or acholuric jaundice, though these three conditions of leukæmia undoubtedly account for the majority. There is no evidence that achrestic anæmia is associated with disease of the liver—it more closely resembles certain toxic anæmias—and there is very little evidence that megalocytic anæmia in patients with cirrhosis and normal gastric secretion is closely related to pernicious anæmia. A fuller discussion of the whole problem of the anæmias associated with hepato-lienal disease would have been greatly appreciated by hæmatologists and more space might with advantage have been given to the consideration of the profound anæmias which occur occasionally in syphilis, miliary tuberculosis, and Hodgkin's disease and which may be difficult to distinguish from leuco-erythroblastic anæmia on the one hand and hæmolytic anæmia on the other. The opinion here advanced that well-recognised clinical entities such as Lederer's anæmia and hæmosiderinuria are examples of acute crises occurring in latent or chronic acholuric jaundice will not meet with general agreement. These are, however, mere matters of opinion and classification, and do not detract from our admiration of the skill with which the authors have performed their task. There is no other book which provides so concise and well documented a summary of modern views on blood formation and the disorders of erythropoiesis, or which contains such accurate information about the rarer anæmias.

Tropical Medical Manual

New and revised edition 1935. By PERCY E. TURNER, M.D., D.P.H., Chief Medical Officer I.H.Q. London: Salvation Army Headquarters. Pp. 88. 2*s*. 6*d*.

IN the new edition of his tropical medical manual, primarily for the use of Salvation Army officers, Dr. Turner has compressed into few words much helpful information about the minor and major maladies liable to affect Europeans in tropical countries. The special hygiene of every-day life in those parts of the world, and the common precautionary measures taken to avoid ill-health, are dealt with faithfully and dispassionately, and the advice given is in every instance expressed in simple and practical terms. The more serious diseases likely to be encountered and the reliable remedies available for their relief are clearly described. This small manual well fulfils its purpose. It is, we understand, not on sale, but copies may be obtained from the Salvation Army Headquarters at the price mentioned above which should cover cost of production.

British Journal of Children's Diseases

Vol. XXXIII. April–June.—In a paper on Appendicular Symptoms in Acute Infectious Diseases Dr. G. W. Ronaldson states that the appendix is frequently involved in the pathological processes found in acute infectious diseases, though suppurative appendicitis is rare. During the quinquennium 1931–35, in which 20,000 patients were under treatment at a large London fever hospital, only two appendicectomies were performed, and at two other London fever hospitals the experience was similar. It is particularly during the prodromal period of measles that localised pain in the right iliac region may lead to unnecessary surgical intervention.—Dr. Christopher Rolleston contributes a paper entitled Artificial Pneumothorax in Children. In one of the five cases described, a girl aged 14, pregnancy occurred as a complication, and led to an unsuccessful attempt at suicide. The ages of the other patients were 13, 14, and 15 (two cases). Three recovered, and two in whom bilateral pneumothorax was performed died. Rolleston concludes that in unilateral disease artificial pneumothorax is as applicable in children as in adults, and that the tendency to effusion is less than in patients over 20 years of age.—In a note on Congenital Varicose Veins, Dr. F. Parkes Weber, who reports an illustrative case in an otherwise normal boy aged 7 years, maintains that so-called "congenital varicose veins" are not, strictly speaking, true varicose veins, but are examples of a developmental enlargement of veins analogous to the developmental enlargement of cutaneous capillaries in any superficial telangiectatic area.—Mr. Macleod Yearsley describes A Case of Asthma and Stammering in a Boy of 10. The patient was relieved by the correction of bad posture and general malcoördination after the restoration of an adequate nasal airway by submucous resection of the septum had been only partially successful. The case illustrates the effect of marked inadequacy of nasal breathing leading to limited chest movement and consequent rigidity with general faulty posture and want of coördination. The stammer was a by-product, the defective airway not permitting the storage of sufficient air to ensure proper vocalisation.—The abstracts from current literature are devoted to acute infectious diseases.

THE LANCET

LONDON: SATURDAY, JULY 11, 1936

INFANTILE DIARRHŒA IN HOSPITAL

TWENTY-FIVE years ago the late summer months were an anxious time for those in charge of children's hospitals. On a certain week began inevitably the influx of grey, dehydrated, and collapsed infants whose death followed within a few days no matter what amount of time and care were spent on them. The condition was aptly known as cholera infantum and accounted for an appalling number of deaths in the first year of life. Epidemics occurred each year in varying severity, the year 1911 being one of singularly bad repute. This has all changed and the reasons for the disappearance of the disease have been variously assigned. The past three summers make it unlikely that climatic changes are a significant factor. Birth control, the use of dried and pasteurised milks, improved sanitation, the diminution of flies following on the replacement of the horse, and a labour government have been thanked by different enthusiasts. Probably few would deny the important rôle played in this improvement by the infant welfare centres. The encouragement of breast-feeding and the recognition of early evidences of digestive disorders have no doubt prevented many deaths, whilst the regulation of artificial feeding and general hygiene have rendered artificially fed infants less liable to infection of all kinds. But the change has not yet been convincingly explained.

It is on the other hand unfortunately true that isolated cases and even small epidemics of diarrhœa, often fatal, do still occur in the wards of children's hospitals. This applies both to surgical and medical cases, the disease not infrequently affecting healthy babies who have been admitted for operation. Experienced physicians are wont to discourage the admission of infants under six months of age to hospital if their condition is one which can be dealt with at home ("lest worse befall"), and will hasten the discharge of acute and operation cases from the ward for the same reason. There are few in this country who will attempt the prolonged medical treatment of pyloric stenosis, for instance, in a hospital ward when operation is available, although it has been abundantly proved that it can be successfully carried out under conditions of individual isolation. Such a policy is in itself an admission that, generally speaking, the measures for the prevention of diarrhœa in infants' and children's wards in this country are not completely effective. In considering the manner in which these measures can be improved, we are met with a startling ignorance of the ætiology and pathology of what has been, and still is, one of the commonest causes of death in early infancy. Investigations by different workers of the bacterial content of stools have provided no constant results, and although specific organisms (Sonne dysentery, streptococci, and atypical paratyphoid) have been isolated in different epidemics, there seems no doubt that the same clinical picture can arise from a multiplicity of agents.

One fact alone emerges clearly. The breast-fed infant is much less liable than the artificially fed one to develop diarrhœa. This suggests that every effort should be made to provide facilities—such as small flats attached to the hospital—for mothers to continue to suckle their infants during the time that the latter are admitted to hospital. On p. 68 of our present issue Dr. W. S. CRAIG relates his experience in the Royal Maternity Hospital, Edinburgh, over a period of three and a half years, of all infants developing symptoms of severe gastro-intestinal disturbance. His findings provide striking confirmation of the importance of complete breast-feeding in the prophylaxis of the disease, since of 41 affected infants, 39 were receiving cow's milk formulæ—10 complementary to and 29 in substitution for the breast. Dr. CRAIG draws attention to the increased risk from introducing cow's milk early in the new-born period. Such studies raise the question whether infection or some metabolic factor is the primary cause of the upset. The absence in many fatal cases of any inflammatory changes in the gut other than a more or less generalised catarrh makes the term gastro-enteritis undesirable, but from the behaviour of ward epidemics, in which the disease spreads among infants in the same room and with the same nursing personnel, it seems probable that infection is the most important single factor. In some epidemics upper respiratory infections, notably otitis media, have evidently been the primary cause of the digestive symptoms, but in other instances no evidence of parenteral infection has been found at autopsy. Some doubt arises too as to the significance of the small amounts of mucopus in the middle ear often described in such cases. From what has been said of the results of stool culture, it follows that the rôle of enteral infection—from milk, feeding utensils, and the like—is hard to identify. In practice, however, the incidence of diarrhœa and vomiting is always reduced by scrupulous care in the sterilisation of feeding bottles, the pasteurisation or boiling of milk shortly before use (preferably after the carbohydrate has been added), and the provision of a sufficient number of nurses who understand what is meant by contamination. This last requirement is all-important, and until the danger of allowing an inadequate staff of untrained nurses to change and feed sick babies is realised the spread of diarrhœa and vomiting in hospital is inevitable. No nurse who is in charge of a sick baby should prepare the feeds of any other infant, and the technique of changing napkins and stool disposal should be designed to reduce the possibility of contamination to a minimum. The fulfilment of these requirements will demand a larger staff of nurses, partially and fully trained, than is usually provided; for without adequate nursing the provision of masks, gowns, small wards, and glass cubicles will simply serve to give a spurious impression of security.

SQUINT

THE thesis that the main cause of concomitant squint in children is a defect in the power of fusion of the retinal images of the two eyes was established in this country by Mr. CHARLES WORTH, whose death we recorded last week. By his invention of the amblyoscope WORTH did more than anyone before him to show the way to what is now known as the orthoptic treatment of squint. At first the method was found to be too uncertain and time-consuming for general adoption, but of late years it has received two stimuli: the invention of complicated instruments and the establishment of special orthoptic clinics. In her new book Miss M. A. PUGH, medical officer in charge of the orthoptic department at Moorfields, calls these instruments "major amblyoscopes"[1]; they are easily adjustable to different angles and directions of squint, and they have the advantage of allowing the trainer to observe the variations in the patient's deviation during the process of training. Many clinics are now running successfully, some under private auspices, others at the principal eye hospitals, where special trainers are employed.

There are two complicating factors in the treatment of children for squint which must be recognised by all who practise it. The first is the danger that a squinting eye will become amblyopic, and the need to prevent this by the efficient occlusion of the good eye. The second is the part played by hypermetropia in squint and the consequent importance of the efficient correction of errors of refraction by glasses. The treatment consists in fusion training and operation, either separately or combined. The chief difficulties that have to be overcome in fusion training are, first and foremost, the suppression of the image in the squinting eye. When this difficulty has been overcome the next step is to establish the first stage of binocular vision—i.e., simultaneous vision with the amblyoscope. To obtain this it may be necessary to employ some device calculated to elicit diplopia. Another difficulty is the fact that in about half of the patients who come for treatment, even when a slight degree of binocular vision is present and each eye is directed by means of the amblyoscope to the same point, the images do not coincide. In these cases there is said to be abnormal retinal correspondence, and it is hopeless to attempt to attain true fusion until this abnormality has been corrected by certain devices which can be employed on a "major" amblyoscope. If the angle of deviation is only small the retinal correspondence is generally normal, and in some of these cases a satisfactory cure can be effected in a comparatively short time by fusion training alone. In most cases, however, orthoptic training has to be supplemented by operation. The summary of results collected by Miss PUGH in her book is of great interest. Among 300 patients, all with normal retinal correspondence, treated by orthoptic training alone, the eyes became straight with good fusion and, in most cases, good stereoscopic vision in 38 per cent. In 25·6 per cent., where a fairly large degree of squint was present, the patient had developed good fusion and reduced the degree of squint but had not attained straightness. Another group of 78 patients were treated by operation combined with orthoptic training, and in these the final results were decidedly superior both as to correction of deviation and as to binocular vision.

Mr. T. ÀB. TRAVERS, from his experience, is inclined to be more guarded about fusion training.[2] According to him no treatment which did not include operation had any beneficial effect on patients with abnormal correspondence. Most of those who did improve with fusion training were discovered to have good powers of fusion after five lessons. He concludes that fusion training can improve a function already present but cannot usually develop the function. It is probably most useful in a relatively small group of patients—those who have good powers of fusion and whose angle of squint is less than 20°. One should probably operate on all cases of squint with an angle over 20°, but unless the object of treatment is merely to correct the unsightliness without any attempt to attain normal binocular vision, orthoptic training is mostly essential as well. The scope of orthoptic training is still a matter of doubt. In 1931 Miss MADDOX[3] made a considerable impression at a meeting of the Ophthalmological Society by her advocacy of the method. Mrs. M. THORNETT-JOHNSON described the work done by her at the squint-training clinic of the L.C.C. in our columns last year,[4] and in the current number of the *British Journal of Ophthalmology* Miss S. MAYOU gives a good account of the procedure.[5] The two books mentioned above should be a help in the choice of appropriate cases for treatment. A great deal must necessarily depend on the personality of the trainer. This is especially important in that not inconsiderable proportion of cases where a primary factor in the production of squint is psychological. In all, patience and perseverance on the part of the trainer, child, and parent are essential.

THE OXFORD MEETING

ONE of the twenty scientific sections of the 104th annual meeting of the British Medical Association, which opens at Oxford next week, will devote its time to the consideration of the history of medicine. To those who are impatient of theories which the passage of time has proved untenable, or of methods of treatment which no reputable physician could now adopt, this resuscitation of the past may seem an idle though perhaps mildly amusing pursuit. But it is, in fact, the impatient who might profit most by the meeting

[1] Squint Training. By M. A. Pugh, M.R.C.S., L.R.C.P., Medical Officer in Charge of the Orthoptic Department, Royal London Ophthalmic Hospital. London: Humphrey Milford, Oxford University Press. 1936. Pp. 117. 7*s*. 6*d*.

[2] An Essay for the Gifford Edmonds Prize in Ophthalmology on the comparison between the visual results obtained by various methods employed for the treatment of concomitant strabismus. By T. àB. Travers. Printed for the British Journal of Ophthalmology. London: G. Pulman and Sons. 1936. Pp. 127. 7*s*. 6*d*.

[3] Trans. Ophthal. Soc., 1931, li., 296.

[4] THE LANCET, 1935, ii., 183.

[5] Brit. Jour. Ophthal., June, 1936, p. 360.

of this section. There is nothing like the ridiculous tenets that our forefathers held so piously for giving the proper perspective to our own up-to-date outlook or to the stunts of the moment. The list of sections itself provides a running historical comment upon the medical interests of the day. At this year's meeting twenty separate sections will discuss their specialties; at the beginning of the century there were only twelve, or only about half as many. A survey of the Association's activities since 1900 shows, naturally enough, that medicine, surgery, and obstetrics, to each of which three days will be devoted at the forthcoming meeting, have formed the backbone throughout. In 1900 the remaining components of the meeting were the sections of State medicine, psychology, physiology, pathology, ophthalmology, pharmacology and therapeutics, laryngology and otology, tropical diseases, and one with the comprehensive title of Navy, Army, and Ambulance. Complete equality then prevailed, each section holding two meetings.

Some of these sections have led chequered careers. For example, tropical diseases appears with regularity up to the outbreak of the war; in 1921 it was absent, made a come-back in 1927, and thereafter appeared spasmodically, but is not represented by name in this year's meeting. Physiology has appeared alone in some years, in others in conjunction with anatomy, sometimes not at all. In 1927 it is linked with the newer science of biochemistry. Psychology, or psychological medicine, is present from 1900; not until 1910, rather surprisingly, does neurology appear in conjunction with it. Laryngology, otology, and rhinology held their meetings sometimes in isolation, sometimes in friendly combination. The war seems to have been the death of the navy, army, and ambulance. Children became a separate entity in 1901, absented themselves from the meetings of 1904–06, but have appeared regularly since. Dental surgery first opened its mouth in 1904; dermatology appeared in 1901; industrial hygiene and occupational diseases were discussed at somewhat rare intervals after 1902. Bacteriology appeared with pathology in 1901, but not alone till 1910, reverting to the combination after the war. Some of the titles listed for an odd year or two make interesting reading. In 1902 we have ethics, later replaced by sociology; in 1909 hæmatology and vaccine therapy made a sudden and isolated appearance. In 1910, 1912, 1926, and 1929, and several subsequent years, a section was devoted to anæsthetics; this year it will be combined with pharmacology and therapeutics. Electrotherapeutics appears as far back as 1903 (as a subsection of medicine), but radiology is not mentioned until 1910. Dietetics we find first in 1911 in conjunction with therapeutics; the trend of modern thought naturally makes nutrition a separate section at the current meeting. Climatology and balneology have occasionally formed a section, as have also medical education, venereal diseases, urology, comparative medicine, orthopædics, and mental diseases. It is perhaps a little odd to find a separate section devoted to-day to tuberculosis and not at the turn of the century when its importance as a cause of death was so much greater. As a separate section its initiation dates back only to 1922; it may be well to realise that the conquest often spoken of is still a long way off, and there is much—clinical, epidemiological, and social—to discuss.

Overlapping between these many sections there clearly must be; but that is all to the good. The danger lies, as in all scientific work, in too narrow specialisation. Joint meetings do not appear to have been popular before 1906, but at this year's meeting eight of the twenty sections will deliberate or demonstrate with another. Making allowance for this some thirty meetings will be held this year. The maximum appears to have been reached in 1910 when 60 meetings are listed—exceeding even the activity of the centenary year. Between 40 and 50 meetings was the general rule in the pre-war period, since when 30–40 meetings have usually been held. The titles of this year's 20 sections are medicine, surgery, obstetrics and gynæcology, ophthalmology, pathology and bacteriology, anatomy, diseases of children, neurology and psychological medicine, orthopædics, oto-rhino-larnygology, pharmacology and therapeutics, with anæsthetics, physical medicine, physiology and biochemistry, radiology, tuberculosis, dermatology, history of medicine, medical sociology, nutrition, and public medicine.

EX-SERVICES WELFARE SOCIETY

A MEDICAL conference held under the auspices of the Ex-Services Welfare Society is reported briefly on another page. This society is concerned with ex-officers and men of all branches of the fighting services suffering from mental disability and war neuroses, and since its inception 19,000 men of all ranks have been helped financially, or by advice and assistance, in procuring suitable treatment or pensions. Representatives of the society visit patients in mental hospitals throughout the British Isles, and where necessary provide travelling expenses of members of their family who wish to go to see them. The society has two curative centres and the use of a villa in the grounds of the City of London Mental Hospital at Beckenham, where certified cases and voluntary boarders are housed. Others are placed on farms in various parts of the country, the society paying for their maintenance. There is an ever-flowing tide of patients passing through these homes, many leaving cured or greatly improved; some are drafted to work in a factory supplying goods to the Army, Navy, and Royal Air Force, as well as to hospitals and local authorities throughout the country. There can be no doubt that the society is doing good work for the whole community as well as for those it serves directly.

KING EDWARD'S HOSPITAL FUND.—A further gift of £10,000 for radium has been made to this fund by Mr. Roger Parr. The radium owned by the fund is permanently on loan to various London hospitals and it amounts to a large proportion of the total radium in use amongst the voluntary hospitals of London. It was bought with a large gift from the late Sir Otto Beit, further gifts from Mr. Roger Parr, and sums collected for the thank-offering fund for King George's recovery in 1929.

ANNOTATIONS

A YEAR'S CRIME

ONCE again the comparative rectitude of the female sex is established by the annual Criminal Statistics for England and Wales. The figures for 1934, just issued (Cmd. 5185, 3*s*. 6*d*.), show that, in a total of some 66,000 persons found guilty of indictable offences during the year, there were more than seven males for every female. The naughtiness of the boys is particularly serious. Over 11,000 boys under the age of 14 committed indictable offences whereas hardly more than 500 girls under 14 got into similar trouble. It is the youngsters that give the male sex a bad name. Of the male offenders in 1934 as many as 33 per cent. were under the age of 17; 48 per cent. were under the age of 21. Men, it is comforting to find, seem to grow better as they grow older. For every 1000 males between the ages of 10 and 21 there were eight found guilty of some indictable offence, while for every 1000 males over 21 no more than two or three were found guilty. Shop-breaking and house-breaking seem attractive to the human boy; they give him a sense of exploration and lawless adventure. One-third of the persons found guilty of "breaking and entering" were under 14 years of age, another third were between 14 and 21. A few weeks ago the annual report of the Chief Commissioner of the Metropolitan Police advocated the more extensive recording of finger-prints in the cases of juveniles for the purpose of clearing up cases where no culprit had been discovered and of removing suspicion from the innocent. Impressed by the statistics of youthful crime, the Home Secretary last week issued instructions which go far to give effect to the Commissioner's suggestion. The continuous and rapid rise in the proportion of boy offenders to the population is indeed a grave social symptom. In the boy population aged from 10 to 14 the proportion mounted from 615 per 100,000 in 1933 to 788 per 100,000 in 1934. How is this jump to be explained? Is it due to a weakening of parental discipline or to a misunderstood leniency in the treatment of children when found guilty? Or is it due to the lessening of reluctance to charge children with offences in a generation which appreciates that the juvenile court will treat the juvenile offender in his best interests and will avoid injuring his future career?

For the rest, the statistics of murder remain, as usual, curiously constant. Sexual offences and crimes of violence against the person went up in 1934. More persons (chiefly women) were tried for procuring abortion in 1934 than in 1933, but the defences were more successful and exactly the same number was found guilty in the two years. The number of cases of attempted suicide known to the police has been steadily rising for the past four years whereas the number of verdicts of suicide in coroners' courts is inclined to fall. It is noteworthy that coroners are increasingly taking advantage of the power to direct or request post-mortem examination both in inquest and in non-inquest cases. The number of inquests held in 1934 was, as in the previous year, over 31,000; the total of deaths investigated by coroners where no inquest is held is very nearly as large as the total of inquests. In roughly two out of every three inquests the coroner sits without a jury. In the study of these and of other statistics in the recent Blue book a little more comment from official experts would be welcome. We can all—we doubtless all shall—use these statistics to buttress our pet theories, political, sociological, and economic. But the nip-farthing tendency to cut down the analytical introductions to official compilations is wasting the value of these documents to the uninstructed reader.

THE CHEMISTRY OF RED BLOOD-CELLS

CLINICAL medicine has been concerned chiefly with the number, size, and hæmoglobin content of the circulating red blood-cells. In a recent study[1] of the permeability of red cells M. Maizels has shown that certain other differences in the cell may prove of considerable interest. He found in normal blood that the concentration of anions and cations is less in the red cells than in the plasma. An apparent deficiency in cell osmotic pressure therefore exists which makes it necessary to assume that about 8 per cent. of cell water is bound. Further an amount of base is present which is greater than that theoretically required to combine with the cell $Cl^- + HCO_3^- + Hb^-$. Maizels suggests that this excess of base is combined normally with some other anion present in the cell. This unknown anion is present in increased amounts in anæmias other than acholuric jaundice. The acholuric red cell has other peculiarities. It contains less water than the normal or other anæmic red cells, and cell potassium is reduced by 20–30 per cent. This decrease in cell potassium is not related to the degree of jaundice or to the reticulocytosis, since it is not found in other conditions, such as myelosclerosis, where there may be a similar reticulocytosis and a high indirect van den Bergh reading. The cell potassium cannot be correlated with the red cell fragility, since the same patient from day to day may show considerable variations in cell potassium but no change in cell fragility. Anion, cation, and water are approximately normal in the red cells of megalocytic anæmias and in myelosclerosis. The cation content of the cell and its water content are increased in microcytic anæmias, but the former only slightly. The concentration of cell cation is thus relatively constant in spite of great variations in the concentration of cell hæmoglobin. These preliminary observations suggest that chemical studies of other constituents of the red cells in pathological bloods may reveal interesting variations from the normal.

MECHANISTIC BIOLOGY

ONE of the greatest stumbling-blocks to the advance of theoretical biology is the persistent refusal of many biologists to consider clearly what they mean by a "mechanistic" interpretation. Mr. Savory, an authority on the natural history of spiders, has attempted[2] to give his views upon the nature of animal behaviour in general, and has naturally chosen most of his examples from the group of animals in which he himself is chiefly interested. His "point of view" as outlined in the first chapter is what he terms "mechanistic." To equate the mechanistic with all objective and deterministic standpoints is a common but quite unjustifiable extension of the term. It was at one time hoped by many biologists that an interpretation based upon the principles of mechanics would apply to all aspects of living organisms. But physicists have themselves

[1] Biochem. Jour., 1936, xxx., 821.

[2] Mechanistic Biology and Animal Behaviour. By T. H. Savory, M.A. London: Watts and Co. 1936. Pp. 182. 7*s*. 6*d*.

already abandoned this view in their own science, and it is evident that in the interpretation of colloid and crystal structure, which are likely to be of importance in relation to biology, principles other than mechanical are involved which are none the less objective and deterministic. It is now general opinion that purely mechanistic interpretations will never succeed when applied to the properties of living matter, and indeed that no fundamental insight into the behaviour of an organism as a whole will be gained so long as the purely mechanistic outlook is retained. In spite of Mr. Savory's protests of loyalty to mechanism and his denunciation of vitalism, which he considers the only alternative, he is curiously inconsistent. "The advance of the Arachnida has probably been checked because they have managed to live by purely mechanistic means," he says, "but Mind, whatever Mind may be, has taken no share in the process." To be a mechanist for one half of the animal kingdom and a vitalist for the other gives Mr. Savory less intellectual discomfort than might have been expected.

THE FOOD OF THE WORLD

THE International Labour Office has used its resources and those of the International Institute of Agriculture to assemble what is known of the nutrition of the poorer classes and of the potentialities of agricultural produce. In a report just published [1] they regret that their studies are limited through lack of information to Europe, Australasia, and the American continents, and that even in these parts of the globe the value of their material is often limited by a number of factors; such, for instance, as inadequate sampling of the family budgets, the unknown quantity of wastage, the fact that information was sometimes restricted to certain articles of diet, and the difficulty of comparing observations made with different standards. In spite of these limitations they have been able to draw definite, if not unexpected, conclusions from a wealth of material.

Comparison of national dietaries showed that the consumption of cereals and bread per individual in Bulgaria far exceeded that in any other country surveyed and was twice that in Sweden, Finland, Germany, or the U.S.A. The consumption of first-class protein and fats was greatest in Norway; Finland headed the list for dairy products, while Belgium and Poland consumed most fruit and vegetables. But in spite of these national differences, the consumption of separate types of food varied with income in each country with a remarkable consistency. With increasing income more meat, fish, fruits and vegetables, and dairy produce were bought, while the purchases of cereals, bread, and margarine went down. Except for the surveys of Sir John Orr (Great Britain) [2] and of Stiebling and Ward (U.S.A.) [3] no satisfying evidence is available of the dietary and calorific values at different income levels. The family budget data from other countries were drawn mostly from earning households presumably better off than those of the unemployed. Nevertheless, the lowest income groups surveyed, even in the U.S.A. and Germany, were insufficiently supplied with calories according to the standards set up recently by a technical commission of the League of Nations meeting in London [4]; only the richest countries and highest income groups attained the London standard for protein. As consumption of food increases with income from one group to another and from times of depression to greater prosperity, there is evidently a considerable potential demand for more food which would materialise if the purchasing power were there. Although for various reasons—from ignorance, tradition, or taste—the best use may not always be made of present powers to purchase, the improvement in the quantity and quality of food consumed when income increases shows that the general standard of health would be raised by increased purchasing power. The report next turns to agricultural production over the past thirty years, and concludes that increases in production sufficient to provide a liberal diet do not present any insurmountable technical difficulty.

The social and economic factors affecting the purchase of food are then studied. If purchasing power as a whole remains unchanged, but the prices of different commodities fluctuate, the consumption of those items with lowered price will increase. Relative low prices of foodstuffs, the report states, are therefore a basic factor in expanding the capacity of consumers to buy food. They may be obtained in a number of ways: by increasing the efficiency of production, by reducing the middleman's share, and by avoiding such measures as agricultural protection and indirect taxation. It is not suggested that the prosperity of agriculture should be disregarded but production should be assisted if necessary by subsidies and State assistance for the improvement of technique. The capacity to consume is at present being increased by pensions and various forms of reliefs, and more directly by the provision of free meals; also by employers who have set up canteens not run for profit or who have provided their workers with allotments. The International Labour Office lays stress on the part coöperative societies might play in increasing food consumption. Distributing societies can coöperate with agricultural marketing societies in reducing middleman charges to a minimum, thereby lowering the price to consumers while the producer obtains a better return. This line of action, it is stated, is available now and requires no new machinery. The report as a whole is an attempt to shape economic and social legislation on a basis of standards obtained by scientific research.

DR. PANIS'S RESUSCITATOR

THE first-aid room of an up-to-date factory nowadays often includes some appliance for carrying out prolonged artificial respiration. For emergencies nothing can replace a method which requires no apparatus of any kind. Schäfer's manual method should be far more extensively known than it is; even medical students often have only a vague idea as to how it should be performed. But Schäfer's method, if it has to be applied for long, needs more than one operator and there is good cause for having some apparatus at hand in places where accidents are liable to occur; and apparatus is essential for the treatment of respiratory paralysis occurring in the course of diphtheria, poliomyelitis, or progressive muscular atrophy. The Drinker respirator and the Bragg-Paul pulsator provide for these cases. But some people have considered them unnecessarily complicated and expensive for first-aid work, and two forms of swinging stretcher have been designed and used in this country. In this simple contrivance the impact of the abdominal contents on the diaphragm causes expiration, just as in the Schäfer method. In France a "resuscitator" for the same purpose

[1] Workers' Nutrition and Social Policy. London: P. S. King and Son. Pp. 249. 5s. 6d.
[2] See THE LANCET, 1936, i., 679.
[3] Dept. of Agriculture Circular, No. 296, Washington, 1933.
[4] See THE LANCET, 1935, ii., 1434.

was designed in 1923 by Dr. Panis, and is now on sale in this country (through Messrs. George Grose and Co.). It is more compact than the swinging stretchers, but more expensive. In this appliance the thorax and abdomen of the patient, lying prone, are supported on a platform which is inclined so that the neck end is a few inches from the ground. A wide strap attached to the base of the resuscitator fastens round the lower part of the patient's back. By movement of a long lever the operator lowers the neck end of the platform towards the ground against the resistance of springs. The abdominal end is raised at the same time, so that expiration is forced. The instrument is easy to work and needs only one operator, who must stand continuously. Respiration is certainly effected by this method, although the cycle is rather jerky as the pressure is not evenly distributed throughout the stroke, but becomes suddenly greater when the springs are tightly compressed. There are several points in which the instrument could be improved. The leatherette rests for chest, axilla, and chin are comfortable, but not easily cleaned. The belt which goes round the patient's back can only be adjusted within small limits, so that the careless or uninstructed will press the thorax instead of the abdomen. Lastly, the instructions are underneath the appliance where they will be read only by the porter who unpacks it.

INFECTIOUS DISEASE IN 1936

THE review by Ch. Dopter, contributed to *Paris Médical* of June 5th, is both comprehensive—it includes many tropical diseases hardly likely to be encountered in France—and limited, for with few exceptions the work quoted is exclusively French, and the writer is preoccupied with the neurological complications of the exanthemata which, while always interesting, are well established. He begins with an evaluation of Burnet's anatoxin in staphylococcal conditions. Excellent results are claimed for this preparation in the minor manifestations of infection, but there is clearly a difference of opinion about its value in the more severe, especially osteomyelitis. To avoid accidents an intradermal susceptibility test is recommended before administration. The value of serum therapy in many streptococcal infections is now fully recognised, but most clinicians in this country would be surprised at the figures quoted from Vincent—81 per cent. of recoveries in 312 cases of "streptococcal septicæmia and meningitis." They would like more information about the findings on which diagnosis was based. The recent and promising work on Prontosil is also referred to. A number of cases of permanent paralysis following central lesions in diphtheria are quoted, and Chalier's researches on the azotæmia occurring in this disease are recalled. This worker's aphorism "that if the amount of urea excreted in the 24 hours is one gramme or more, death is almost certain" might prove a valuable prognostic pointer. The combination of ascorbic acid with adrenaline in malignant cases is recommended, and also the administration of very large doses of strychnine—in view of the success of this therapy in poisoning by the barbitone derivatives. The theory of Duliscouët and Ballet that certain strains of staphylococci symbiotically enhance the invasive power of *C. diphtheriæ*, while other strains inhibit it, is suggestive. For the carrier state, gargling with a solution of the neutral sulphate of o-oxyquinoleine, 1 in 5000, is said to be a speedy and effective method of producing sterilisation.

Attention is directed to the cerebral complications of measles, and of course to the treatment with adult and convalescent serum. In Poulain's opinion this is effective even up to the stage of initial catarrh, preventing, if not the disease, at least the complications. If this is hardly the trend of opinion in this country, it should be remembered that the dosage recommended is vastly greater than is customary here. The work of Bayer on pertussis is also dealt with. This investigator found that half his cases showed changes in the cerebro-spinal fluid, sometimes an increase in pressure and sometimes an increase in the protein and the cells, with dilated ventricles as shown by ventriculography. He has also employed a complement-fixation test which gives a steadily increasing proportion of positives from 25 per cent. in the first week to 100 per cent. between the fourth and ninth. This is recommended for diagnostic purposes where doubt exists. Cases of mumps complicated by meningo-encephalitis are quoted, and the experimental evidence as to the ætiology of this disease is assessed. In the post-encephalitis-lethargica syndrome atropine is still preferred to stramonium in continental circles. An epidemic of poliomyelitis gave Violle and Montus the opportunity to observe that "no two cases occurred in the same family, the same house, or the same street," but Jensen's experience was exactly the reverse. The former authors were equally successful with Pettit's serum, convalescent serum, or the serum of unaffected contacts, whereas Jensen got his best results from the serum of the abortive cases. The pros and cons of prophylactic vaccination are discussed at length. A parkinsonian syndrome developing and disappearing in the course of an attack of enteric, which is here recorded, is surely unique. In this disease a skin test performed with endotoxin is advanced as of prognostic value; a rapidly developing well-marked reaction indicates a mild infection, and vice versa.

Prophylactic vaccination is warmly commended in undulant fever, bacillary dysentery, and plague. In the last case, living organisms of an avirulent strain have been employed. It is clear however that the maintenance of this avirulence must become a matter of some anxiety.

MEDICINE STAMP DUTY LEAKAGE

THE Select Committee of the House of Commons, when appointed in fulfilment of the promise made by the Chancellor of the Exchequer as reported in our parliamentary intelligence last week, need not go far outside the 1914 report of the Select Committee in Patent Medicines. This report, which failed to get a hearing in a world at war, was republished as a supplement to THE LANCET of Jan. 10th, 1925. One of the recommendations of that committee was that "unreasonable exceptions" to liability to stamp duty should be removed, and it was emphasised that the distinction between the name of an ailment and the name of an organ, the seat of the ailment, ought to be abandoned. In the opinion of the committee there should be no distinction for the purpose of assessment of duty between a medicine described as a "cough mixture" and one described as a "chest mixture"; or between a "corn paint" and a "toe paint"; or between a "headache powder" and a "head powder." Yet according to the law as administered the use of the name of an ailment renders a medicine liable to duty, while by using the name of the seat of the ailment as a description of the medicine liability to duty may be escaped. But that anomaly is almost a natural one compared with some of the more subtle means of avoidance of the tax which the wit of the legal mind, working sedulously through many pettifogging generations, has

discovered in an enactment which began a hundred and fifty years ago. By the side of the revenue yielded by income-tax the revenue from medicine stamp duty is infinitesimal, but it might be suggested that the experts who have discussed how to stop leakage from the great big volume may be kept at their job for a little while longer to find a bung to fit the hole in the little barrel.

A SURGICAL CATALYST

EARLY in the week two significant things happened. The resuscitated French Academy of Surgery paid a visit to London, at the invitation of the Royal College of Surgeons of England, the first of a series of reciprocal annual visits. The two presidents, Sir Cuthbert Wallace and General Rouvillois, at an evening reception at the college on Monday, both spoke of their common aim in the advancement of surgery. An appropriate background to this fellowship was provided by the presentation to Lord Moynihan of a silver statuette and a cheque for 1000 guineas in appreciation of his services to surgery. The statuette is a virile figure standing on a crystal globe and holding above his head an open book of gold bearing the words "The British Journal of Surgery 1913–35." The statuette was presented by Prof. E. W. Hey Groves, who has been editorial secretary of that journal during the same period, and the cheque by Sir D'Arcy Power for transmission to the president of the college or behalf of the journal, to be expended by the college on research work in surgery. It was not customary, Mr. Hey Groves remarked, nowadays to pay debts; this was just a token payment in discharge of gratitude for all that Moynihan had done for surgery. His first claim to our gratitude, he said, was the ideal of perfection, exemplified at Leeds, in which surgery can be carried out. But this was not enough. Moynihan had gone on to spread the gospel by founding the surgical club which now bears his name, by starting and leading the *British Journal of Surgery*, and by initiating at the same time the Association of British Surgeons of which the realisation was delayed by the war. Lord Moynihan, replying, spoke of the improvement of surgery and the advancement of research as the pre-occupations of his life. It was the lack of unity among surgeons that had led him to the thought of a catalyst in the form of a journal and then of an association. Looking ahead he saw one further step—the Colleges of Physicians and Surgeons united in an Academy of Medicine. In the meantime he would divert the younger surgeons from their apprenticeship in the teaching of anatomy to the limitless subject of physiology.

STAPHYLOCOCCUS INFECTION AT A MATERNITY HOME

Dr. A. H. G. Burton has reported to the Ilford maternity and child welfare committee on an outbreak of mastitis among mothers at the Ilford Maternity Home, associated with dermatitis among the infants. The home, which has been running since 1918, had new additions opened last January and was closed to further admissions in March owing to this outbreak which has since been investigated by the Ministry of Health. The outbreak was not confined to the maternity home, other cases of mastitis occurring in the district, and the investigation was made more difficult by the fact that some of the abscesses did not develop until a month or more after the confinement. In every case it was found possible to identify the infecting organism as the *Staphylococcus aureus*, but a careful examination of all possible fomites gave no clue to the source of infection. The staphylococcus was, however, found in the nose or throat of all the women who fell ill with mastitis. This discovery caused Dr. Burton to give instructions that the nursing staff at the home were to wear masks whenever they were in the wards and not simply when attending to patients as had always been the practice at the home. Swabs taken from a number of babies showed that 40 per cent. of those examined were carrying the staphylococcus in the throat and that their mothers were also carrying the same organism in the nose or throat. The probable sequence of events in Dr. Burton's opinion was this: the mother carrying the organism in her nose and throat infected her baby's throat, probably by kissing, and the baby in turn infected the mother's breast when suckling. In order to determine whether the women were already infected on entering the home, swabs were taken from a number of women in the later stages of pregnancy, and it was found that one-third were already carrying the organism in nose or throat. Dr. Burton rejects, however, the suggestion of preventing such an outbreak by refusing admission to cases with a positive swab, as he doubts the value of one negative swab, and women might be infected from visitors after their admission to the home. The better course, he thinks, would be to immunise the women before admission, and he is proposing a trial of staphylococcus toxoid. His feeling is that mastitis in some cases acts like an infectious disease with a primary infection appearing in nose and throat and taking on epidemic proportions when (1) the carrier-rate in the population is high compared with the number of susceptibles, (2) the local or general immunity of the patients is lowered, (3) the virulence of the organism is increased. We understand that the Ministry of Health after careful inquiry has not traced responsibility for the outbreak to any failure of technique or lack of care.

WE regret to announce the death on Tuesday of Sir William Hamer, county medical officer of health for London from 1911 to 1925.

Mr. Hugh Rose has been appointed an unpaid commissioner of the General Board of Control for Scotland. His father, Sir Arthur Rose, was chairman of the board until his resignation two months ago.

UNWANTED INDICES TO "THE LANCET."—Any reader who has an unbound copy not in use of the index for any of the years 1932, 1933, 1934 (Vols. I. and II.), and 1935 (Vol. I.) would greatly oblige by posting the same to the Editor of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—*Election to the Council.*—On July 2nd three Fellows were elected into the council to fill the vacancies caused by the retirement of Mr. F. J. Steward, Mr. R. G. Hogarth, and Mr. R. E. Kelly. The result of the poll was as follows:—

	Votes	Plumpers
CHARLES MAX PAGE (St. Thomas's)	710	39
ROBERT ERNEST KELLY (Liverpool)	681	60
WILLIAM HENEAGE OGILVIE (Guy's)	580	31
Cecil Pembrey Grey Wakeley (King's College)	497	30
Duncan Campbell Lloyd Fitzwilliams (St. Mary's)	311	14

In all 1107 Fellows voted; in addition 11 votes were found to be invalid. Mr. Page, Mr. Kelly, and Mr. Ogilvie are all elected for the full period of eight years.

PROGNOSIS

A Series of Signed Articles contributed by invitation

CVII.—PROGNOSIS IN HAY-FEVER

HAY-FEVER is the disease which comes to certain people consequent on their specific sensitivity to grass-pollen. It occurs spontaneously at the season when the grass-flowers load the atmosphere with their pollen-grains in sufficient quantity to affect those sensitive people. This pollen-cloud occurs of course at different times at different places, but in the south of England the hay-fever season may be taken to extend from May 20th to July 15th, and to be at its height at midsummer. The local dates of onset and of finishing are important for they may show either that a suspected case is not one of hay-fever at all, or that there is some other disease superimposed which serves to extend the genuine hay-fever season.

The *diagnosis* is obviously suggested by this seasonal incidence; also by the characteristic symptoms of conjunctivitis, paroxysmal rhinorrhœa, and so forth. The actual pollen sensitisation can be demonstrated at any time of the year by bringing any grass-pollen, or an extract thereof, into intimate contact with the living tissues of the sensitive subject; in practice the best method is the prick test made into the skin through a very strong grass-pollen extract—duly controlled of course by another prick through a drop of normal saline on a neighbouring site. With such a test one does not get misleading or indeterminate results.

Hay-fever is *hereditary*. Probably always, certainly sometimes, it may be inherited as hay-fever from hay-fever ascendants, and we may get a dozen or more close relatives similarly inflicted; or it may be inherited as one among several other manifestations of the toxic idiopathies, thus for example an urticarial mother and a migrainy father may produce a hay-fever daughter, who in her turn may have an eczematous baby—this eczema perhaps turning to asthma during childhood. Symptoms of hay-fever do not necessarily begin at birth; the usual time of onset is between the eighth and fourteenth years; but symptoms *may* begin at birth, or on the other hand may delay till old age. An onset at 75 is the latest I have come across. Thus the disease may show itself in the descendants before it appears in the parents, and indeed since it may appear first in old age it is obvious that many a man carrying the taint from birth must die before the hay-fever symptoms develop.

Causation.—From the stories patients tell of their first attacks it is evident that these are sometimes set going by psychological disturbances; probably this mental factor always plays a part in the onset of the first and in the severity of subsequent attacks. Again, the minor shocks of suddenly going into bright sunlight or cold air notoriously may start attacks if other circumstances are conducive. Excessive nerve reactions from an irritated area of the nasal mucosa or from the conjunctiva will facilitate hay-fever symptoms; similarly old damage in the eyes, nose, or lungs may precipitate trouble in these areas. All these "causes" do not invalidate the fact that hay-fever depends on a specific sensitisation of the body as a whole to grass-pollen; the blood fluids taken from the vein of a hay-fever subject at any time of the year can transmit the disease temporarily to normal people.

The *pre-condition*—i.e., that which is inherited at birth and which must exist as some predisposing abnormality till symptoms declare themselves, possibly many years later—is quite unknown in character but must be regarded I think as an essential part of the disease; I have often been asked by mothers to test the skins of children with a marked hay-fever heredity, but unless the characteristic symptoms have already appeared I have never yet found a positive skin reaction.

PROGNOSIS OF THE UNTREATED DISEASE

Once symptoms have shown themselves the natural disease may last for a few years and then peter out, or it may last longer and sometimes continues to attack people for fifty summers on end. [A curve showing the ages for the spontaneous *cessation* of hay-fever would be interesting, but most cases seen by doctors are cut short through medical interference.] Perhaps we may take it that the symptoms of an average case may gradually increase in severity for ten years or so and then will slightly decrease at each succeeding summer. Apparently the more severe cases last the longest, as one might expect perhaps.

PROGNOSIS IN THE TREATED DISEASE

As we have seen, the pathological mechanism of hay-fever is complex, and therefore the medical treatment devised to frustrate each "cause" is varied. Thus amelioration of symptoms *might* be achieved by careful and thorough psychological treatment, or by attending to local traumas and malformations in the nose and throat; the plan of extirpating or dulling the so-called asthmogenic centre in the nasal mucosa by cauterising, by carbolic, by ionisation, and so forth is legitimately prominent in the minds of the laryngologists. But since the sensitising power exists in every drop of the patient's blood the disease is constitutional: that the nasal or eye symptoms are prominent is due to a botanical accident. By far the most hopeful, and as I think most logical, method is to tackle the specific sensitisation by desensitisation, or rather by a compensating immunisation.

The best method for *immunisation* is by a long succession of prophylactic doses given in the early spring right up to the hay-fever season. It is possible to begin with a small initial dose of 40 units and to creep up to a dose as big as 100,000 units or over by daily injections without any untoward symptoms to the patient; and the patient so treated, though previously highly sensitive, can then walk almost unscathed in the fields with the pollinating grass-heads all round him. While this process of immunisation is going on the diagnostic skin reactions described above will gradually diminish till at last the prick through the drop of 20,000 unit pollen extract gives no reaction so cannot be distinguished from the prick through normal saline—a phenomenon intellectually satisfying to both the inoculator and the patient. Such a course will desensitise for one season, will probably affect favourably all subsequent hay-fever seasons, and will certainly make the process of desensitisation in the following years more quick and less eventful—i.e., it hastens the "petering out" process of the natural disease.

As for the frequency of inoculation, this will naturally depend upon the time at one's disposal; if the patient is provident enough to begin in February a dose every other day will be enough, if in March then a dose every day should be given, and so on. If a patient wishes to commence in May, then three, four, or even five doses a day may be attempted, but three per day is about as much as is compatible with ordinary life. If "something *must* be done," it is always possible to resort to a rush course in a nursing-home or hospital; by cramming eight doses or more into each day we can get the desensitisation completed in about a week.

SUBMAXIMAL IMMUNISATION

All this is a great deal of trouble and patients with mild hay-fever may reasonably say that it is not worth while. Some good can be done by much fewer inoculations, but it is difficult to say how much amelioration may be achieved by, say, ten injections in place of fifty. Very often the results of a course ending with a top dose of say 5000 units will satisfy the patient as being good enough—but it is impossible to guarantee this. Then, again, to those who have not been prophylactically treated at all before the hay-fever season has begun, a few doses of say 100 to 200 units often give surprisingly good results, especially if they are accompanied by a minim or two of the 1 in 1000 adrenaline. However, the inoculator will serve his reputation best if he can persuade the patient to undergo the thorough prophylactic treatment right up to 100,000 units.

SELF-INOCULATION

The most convenient method is to teach the patients to inoculate themselves. To go to a doctor, or for a doctor to come to see a patient, 50 times within two or three months consumes more time and more money than the patient can usually afford. If the technique of inoculation, sterilisation, &c., is cut down to the essentials and divested of unnecessary surgical ritual each inoculation may easily be done by a moderately competent person in 30 seconds on going to bed. As one woman said to me on successfully finishing her course, "It is as easy and quick as taking an aspirin." But patients must be taught well—which usually takes an hour at least; they must be seen by the medical instructor several times to make sure that they are doing things correctly; and he must use his judgment very critically as to the minimum of intelligence necessary in the patient and as to the suitability of the patient's temperament for self-inoculation. Four years' experience of teaching self-inoculation, both in a hospital clinic and in private practice, convinces me that 9 people out of 10 can be taught satisfactorily.

JOHN FREEMAN, D.M., B.Ch.,
Director of Department of Clinical Bacteriology, St. Mary's Hospital.

SPECIAL ARTICLES

WAR STRESS AND SOME OF ITS SEQUELS

UNDER the auspices of the Ex-Services Welfare Society a medical conference was held on July 3rd at the Hyde Park Hotel to discuss this subject.

Dr. EDWARD MAPOTHER (Maudsley Hospital, London), who presided, suggested that the discussion should be largely focused upon three conditions: (1) hysteria, (2) delinquency, and (3) morbid grievances and paranoid conditions. The commonest early forms of war neurosis were states of persistent fear and the multiform direct expressions of this, and the commonest later sequel of war neurosis was either still anxiety or perhaps nowadays a condition of depression and ready exhaustion. Though these two sequels were the commonest, yet the very simplicity of their relation to fear made them less of a problem, at least to the administrator, than the three conditions under discussion, in which the influence of war stress and fear was more indirect. In connexion with hysteria, delinquency, and morbid grievances certain highly practical and extremely difficult questions arose, such as the extent to which the disability was due to conditions of military service, the possibility that its incidence could be reduced by previous training, and the best ways of handling the situation when symptoms became manifest (1) during service, (2) after service.

Hysteria

Dr. F. G. Nattrass (Newcastle-on-Tyne), who opened the discussion, said that in his experience the grosser manifestations of hysteria, such as blindness, deafness, paralysis, and fits, had not, generally speaking, persisted for any length of time after the war, though some retained a hysterical stammer or tremor. At the present day the vast majority of the patients presented the picture of neurasthenia—an anxiety state which did not seem to improve with the passage of years. War neurotics as a class would never be able to take their place in civil life under ordinary civil conditions, yet under sheltered conditions such as those provided by the Ex-Services Welfare Society at Leatherhead many of these men could lead useful lives. The time had come when the State ought to offer to all such men occupation of a permanent sort on the lines indicated by the society.—Dr. RUPERT COLLINS (Cheltenham) emphasised the importance of considering the previous history of candidates for the Army so that obviously unsuitable men, who might be quite fit physically, could be eliminated. At a base hospital in France it had been his unpleasant duty to report on men who had been sent down for cowardice. The history of these men showed that they were all of a nervous, temperamental type—e.g., musicians and artists—quite unsuited to the front line where the very noise made them lose their nerve.—Dr. W. R. D. FAIRBAIRN (Edinburgh) said that the war neurotic inclined to invest his capital in his neurosis and was reluctant to reinvest it. He had retained the high degree of self-love characteristic of the child; he demanded protection from the community, and his failure to gain this resulted in anxiety. There were no ends to his demands and the inability to satisfy them led to a sense of grievance and frustration which in turn led to aggression. Aggression either turned inwards, and the patient felt a martyr, or he attributed his feelings to those around him, producing characteristic symptoms of paranoia. The cases who just came short of overt delusions presented a difficult problem, and were among those who provided the society with its raison d'être.

Morbid Grievances

Wing-Commander H. L. BURTON (Royal Air Force) thought there were very few cases of morbid

grievance in the services at the present time. There were two main grievances: one was pension and inadequacy of treatment, and the other was the loss of positions through war service. Dr. Mapother's point about personality was a very important one. Everyone was subjected to the same strains but only a few broke down, which seemed to suggest that there must be some fault in the person. It seemed to him that such persons as broke down had shown early evidence of grievances such as jealousy, while others were constantly imagining slights which were entirely subjective. Patients who failed because of their limited intelligence tended to attribute their failure to outside causes and paranoid ideas. People with pension grievances tended to attribute their condition to any illness from which they might have suffered during the war. This was sometimes encouraged by the efforts of well-meaning people who pushed claims for pension without medical knowledge. As to treatment, those who were fully mentally equipped did not benefit from an analytical treatment. At the present time in the Air Force every effort was being made to choose men who were both physically and temperamentally fit.

Delinquency as a Sequel of War Stress

Dr. H. P. FOULERTON (Broadmoor Criminal Lunatic Asylum) said that in this connexion the professional delinquent scarcely needed mention; his defect, if not congenital, at least developed in childhood or early youth, and was one of character rather than of intelligence. It was significant that some of those who shammed insanity appeared to be of the paranoid type, and at a later stage develop a definite psychosis. Fortunately, in spite of their often astute and alert make-up, it was fairly easy to recognise those whose antisocial conduct was due to some inherent mental defect. With the subnormal delinquent there was often a reasonable prospect of some success when suitable treatment could be obtained. Heredity, environment, and mental habit, most often in conjunction, were in Dr. Foulerton's opinion the most prominent causes of delinquency. He took this opportunity of thanking the Ex-Services Welfare Society for the kindly interest they had taken in the ex-Service men under his care.

General Discussion

Colonel J. HEATLY-SPENCER (consulting physician to the British Army) said that the questions discussed did not very largely effect the present-day Army. Anxiety neurosis was seen among the senior officers but not among the senior non-commissioned officers who had seen war service, and therefore it could hardly be due entirely to war service. Many other factors must have come in, such as the strain that senior officers had to undergo. Two factors had to be considered: the actual war stress and the subsequent economic stress in civilian life. As regards prophylaxis, too gloomy a view should not be taken, for neurotics represented only about 2 per cent. of the medical casualties in the last war, and any future war would probably show about the same percentage. At the present time the only standard of fitness in recruits was physical fitness, and this, he thought, should be a good guide.

Surgeon-Captain J. C. DANSON (Royal Naval College, Chatham) said that seamen for the Navy were recruited at a very early age, and in this way many unsuitable ones were weeded out. The world to-day, especially the juvenile world, was a mixture of looseness, laxness, and lack of parental control. Many boys who came to Shotley had no idea of discipline. Nothing could be more humane than the discipline in the Navy, nor could there be more understanding. Among adult seamen some of those sent abroad for a long season developed paranoic symptoms and symptoms of grievance. The cases of delinquency with which he had had to deal had mostly been post-encephalitic. There was not much hysteria in the Navy. In the Royal Naval Hospital at Chatham, where both Army and Navy were received, he found that soldiers were far more prone to manifestations of gross hysteria—though he did not know why.

Dr. GEORGE GORDON (Institute for Scientific Treatment of Delinquency) said that after ten years in direct contact with ex-Service men he found his former views rather altered. He would have said ten years ago that the sequels of war stress were seen in men who served in the war, but now he felt that the absence of the father and senior brothers and the emotional condition of the mother had had their effect on the younger generation also. Discipline was a necessary factor in life and had been lacking. With regard to morbid grievances, some distinction must be made between those who had and those who had not a paranoic personality. Myers' view was that the paranoic was not so much a sick man as a peculiar individual; it was useless to try and talk with him, but many other men with grievances would react favourably if the original grievance which had been colouring his life could be eradicated.

Dr. ERICH GUTTMANN (Maudsley Hospital) had seen the war from the other side. He said that the classification of symptoms over here was different, as was the diagnosis and treatment of neurasthenics. The economic conditions in Germany were particularly bad immediately after the war and this was one of the factors which produced many neurasthenics. He agreed that gross hysterical symptoms had practically disappeared. In some parts of Germany no gross hysterical symptoms were to be found, while in other parts were found all the usual signs of hysteria. Only psychopathic personalities suffered from neurosis. Many of the war neuroses in Germany had been found in persons of dull or backward mentality, in which cases the prognosis was very poor. In Munich cases had been traced back about 15 years, and it was found that many of them had a history of delinquency before the war. Psychopathic personalities did not always make bad soldiers. He was inclined to believe that most neuroses could be located in some physical disability or damaged organ.

Dr. D. H. PAUL (Ministry of Pensions Hospital, Cosham) said that patients improved greatly immediately they were removed from their domestic and economic worries. Nowadays some of the old "grousers" had dropped out and others had made up their mind to settle down.—Major J. BENNET (specialist in medicine and mental diseases at the Queen Alexandra Military Hospital) was pessimistic of being able to eliminate neurotics on enlistment, for neurotics only displayed their symptoms after some period in the Service on some emotional stress.—Dr. S. EDGAR MARTIN (Salisbury) said that in the submarine service tests were carried out on recruitment with very good results.—Dr. T. P. LINEHAN (London) said that the worry of having medical boards affected the ex-Service men adversely; they improved if they were assured of a settled pension.—Dr. C. DAVIES-JONES (Newport, Isle of Wight) said that in the future psychological science might be able to detect

the neurotic before he enlisted. He also hoped that it might be possible to inculcate discipline into the youth of the day. Promises made to recruits which could not be carried out gave them a sense of grievance.—Dr. NATTRASS emphasised his thesis that war neurotics were now not capable of improvement and should be cared for by the State, to give them some of the happiness which was their due.

In conclusion, the PRESIDENT disagreed with Colonel Heatly-Spencer that only 2 per cent. suffered from nervous disorders; many neurotics were diagnosed under other disabilities. There was general agreement that the personality of the man played a great part. He was not very hopeful of the effect of some simple psychological test, but agreed on the importance of excluding neurotics, because of their effect on their fellow soldiers. Just after the war all sorts of criminal behaviour was excused as being the result of war service; but in some cases the war did seem to have been responsible. He deprecated the atmosphere of licence in some hospitals where drinking and other vice was led by the type of men called "sportsmen" in public houses.

MEDICINE AND THE LAW

Penal Servitude for Illegal Operation

Dr. Laura Winifred Sanders-Bliss, of Harley-street and Bayfield House, Little Bookham, Surrey, was sentenced last week at the Central Criminal Court to three years' penal servitude for performing illegal operations on five women. The prosecution and defence illustrated the different aspects of a topic which has lately attracted discussion by its medico-legal implications. The prosecution stated that the cases of the five women presented common features—an interview with Dr. Sanders-Bliss, the story of a pregnancy, the arrangement of a fee (which varied from £25 to as much as £100), a visit to Bayfield House, and an operation. Police officers, visiting the premises on May 2nd to arrest the accused, found a woman patient lying on the operating table. A doctor who arrived immediately afterwards described the indications that an operation had just been performed. The prosecution suggested that Bayfield House was conducted as a home where women went for the purpose of criminal abortion. On the other hand the defendant said that, though she had treated a number of young women between the ages of 20 and 30, she had also had many middle-aged and elderly patients, and that the inmates of Bayfield House had included members of both sexes. As for the women patients whose names appeared in the charges against her, she explained that she was a specialist in women's complaints and had treated a number of cases of miscarriage. She had been impressed by the terrible suffering and injury caused by the ignorant and careless attempts of women to avoid the unwanted child. If such women came to a doctor in a ruined state of health, it was proper to deal with the abortion which was imminent and unavoidable. Dr. F. J. McCann, giving evidence for the defence, said that, assuming the defendant's description of her patients was correct and that abortion was inevitable, her treatment was the only successful treatment which could be given. Sir Patrick Hastings, K.C., addressing the jury on her behalf, maintained that she had merely done her duty and that her conduct had been absolutely proper. The jury found Dr. Sanders-Bliss guilty (along with a nurse who assisted her at Bayfield House), and the Lord Chief Justice reminded her that so grave was the view taken by the law of these cases of illegally procuring abortion that she was liable, in respect of the five cases of which she had been found guilty, to be sentenced to penal servitude for life. In passing sentence as already stated, Lord Hewart said it was obvious that Dr. Sanders-Bliss had been practising as a professional abortionist, using her skill for this purpose. She had been convicted, he observed, on the clearest possible evidence. It is not often, we may add, that such clear evidence is available in offences of this kind. Criminal abortion is naturally performed in secret; witnesses can seldom be obtained apart from the patients who are themselves in the legal theory (though not in actual practice) deemed accomplices in the crime. The police were either very clever or very fortunate in timing their visit to House. They obtained access to entries in a Bayfield book with regard to patients. One woman whose case formed one of the charges against Dr. Sanders-Bliss, and who paid a fee of 100 guineas, was described in the book as "recuperating from influenza." Different judges have treated the offence of illegally procuring abortion with different degrees of severity. The recent proceedings at the Central Criminal Court exhibit no judicial tenderness towards the professional abortionist.

Expert Evidence "Objectionable"

The Court of Criminal Appeal has always been reluctant to exercise its power to allow fresh evidence to be called on appeal. Particularly, it appears, do their lordships deprecate any fresh evidence from medical experts. Earlier this year, when a poor woman was convicted of having thrown her baby into a stream, the court made an exception and allowed the prison doctor to give fresh evidence which resulted in the quashing of the conviction. Expert medical testimony was on that occasion allowed to avert a miscarriage of justice, but a warning was given that the case was not to be regarded as a precedent. The warning was repeated last week on the appeal of Mrs. Bryant against her conviction on the charge of having murdered her husband, a Dorset cowman, by arsenical poisoning. A feature of the trial had been the failure of the prosecution to prove that she ever bought any arsenic. One ground of the appeal was that evidence of earlier illnesses of the deceased husband was admitted as showing previous attempts of Mrs. Bryant to poison him. It was contended that the summing-up of the trial judge did not sufficiently caution the jury that they should pay no attention to these earlier illnesses unless they were satisfied that the illnesses were due to arsenic administered by the accused; on this point, it was said, the evidence was in fact inconclusive. Dr. Roche Lynch, called by the Crown, had put the case no higher than to say that the symptoms of the earlier illnesses were consistent with arsenical poisoning; and one doctor who had attended the deceased had ridiculed the idea that the earlier illness had been due to arsenic. The Court of Criminal Appeal found no fault with the summing-up. Towards a second aspect of the appeal the judges were equally unsympathetic. Mrs. Bryants' counsel asked leave to call Prof. William Bone, F.R.S., for the following reason. In seeking at the trial to establish the presence of arsenic in the Bryants' home, evidence was given of a tin alleged to have contained arsenic and to have been burnt in a fire in the domestic copper a few days after the husband died. The remains of the tin and the ashes were afterwards thrown on the rubbish

heap. For the Crown Dr. Roche Lynch gave an analysis of the ashes: he said he found 149·6 parts of arsenic per million—a proportion so high that arsenic must have been burnt in the fire to produce it. Counsel stated that Prof. Bone, after reading this evidence in an account of the trial, had communicated with the defence and volunteered to give evidence to the effect that, while the figure varied with different coals, the average normal residue was approximately 1100 parts of arsenic per million and the lowest normal proportion was about 240. Lord Hewart intervened to express the view of his colleagues in the Court of Criminal Appeal. They were unanimously of opinion that there was no occasion for fresh evidence. "This application is of the objectionable kind which we foresaw in a recent case when in very exceptional circumstances we admitted further medical evidence. This kind of possibility was adumbrated and we set our faces like a flint against it. It would be intolerable if the Court were to listen to the afterthoughts of a scientific gentleman in a capital case or in any other case." At the end of the formal judgment dismissing the appeal, the Lord Chief Justice returned to the subject with characteristic vigour. It was only in the rarest cases, he observed, that the Court would hear the evidence of scientific witnesses who, after the trial, applied their minds to the evidence given in a case in which they were not called, and who sought to say that a mistake had been made. Thus, whatever be the scientific truth about the normal proportion of arsenic in ashes, and whatever may have been the significance of this part of the evidence for the prosecution in the minds of the jury at the Dorchester Assizes, the Court of Criminal Appeal reasserts its determination not to reopen any scientific issue in the light of fresh evidence "in a capital case or in any other case."

PARIS

(FROM OUR OWN CORRESPONDENT)

BARBITURATE POISONING

AMONG the poisons most à la mode as painless aids to suicide are Gardenal and Veronal. No one knows exactly how many suicides and attempted suicides they are responsible for, the hospital authorities being reluctant to divulge the pertinent facts lest the insurance authorities, particularly the Assurances Sociales, refuse to contribute to the upkeep of the patient in hospital on the plea that he or she is suffering from a self-inflicted injury. So all that can be said is that each of the large general hospitals deals as a rule with several such cases every week. A refreshingly frank paper on the subject of would-be and actual barbiturate suicides has recently been published by Dr. R. F. S.-Y. Ménard[1] who discusses the pros and cons of including the most popular barbiturates among the drugs to be sold only on a doctor's prescription. He is inclined to think that less than 10 per cent. of such would-be suicides achieve their alleged purpose, that veronal is a considerably more dangerous drug than gardenal, and that the prognosis is worst when the patient is admitted to hospital in the morning, for then the odds are that the drug has had the whole of the previous night in which to act, whereas when it is taken in the afternoon or evening there is often an interval of only two or three hours between the swallowing of the drug and the patient's arrival in hospital for treatment with the stomach pump, strychnine, and Coramine. As for the putting of a check on the sale of the barbiturates, Dr. Ménard would not object to veronal being added to the list of drugs to be sold only on a medical prescription. But he sees in the free sale of gardenal a "véritable utilité sociale." In his defence of this seemingly paradoxical idea, he classifies would-be suicides according as they are insincere or genuine. In the first class, the person concerned, usually a woman, finds in attempted suicide a means of publicity or blackmail; her ambition is "un joli petit scandale," a free ride to hospital, and terror-stricken and penitent relatives. A day or two later she returns to the bosom of her family without any serious injury to her health. For this class of patient 1 or 2 grammes of gardenal may prove a more or less undisguised blessing. Without it, the would-be suicide might be driven to resort to more desperate measures. Dr. Ménard includes in his second group those persons whose attempted suicide is prompted by genuine distress and privations. Their recovery from gardenal poisoning may be the signal for taking stock of the whole position and perhaps the making of a new start. In such cases gardenal has really served a useful purpose.

[1] Concours Médical, June 14th, 1936, p. 1833.

NICETIES IN THE SALE OF MEDICAL PRACTICES

Considerable discussion in medical circles has recently been evoked by a complaint of a purchaser of a medical practice that the vendor had not acted fairly by him. It was agreed that the vendor should not practise medicine for a certain time within 20 kilometres of his old practice. He settled down 39 kilometres away, but he continued to see patients in his old practice when called in to consultation by colleagues in the same district. The matter has been submitted to the Conseil de Famille Syndical which will have to decide whether the vendor of the practice was in spirit as well as in letter abiding by the agreement made with the purchaser. In certain quarters more concerned with the maintenance of strict etiquette between doctors than with the wishes and the best interests of the patients, it is held that the vendor should advise other doctors wishing to consult him to seek the aid of his successor. Dr. Paul Boudin, the well-known medico-legal expert, is an upholder of this view, and he is also of the opinion that it is not correct for a doctor on holiday to give patients the benefit of his advice without reference to the local doctors.

HORTICULTURALLY MINDED DOCTORS

Some hundred French doctors have recently formed a horticultural fraternity with the title of "Médecins Amateurs de Jardins." The object of this association is to enable its members to exchange information, seeds, plants, and anything else more or less peculiar to horticultural addicts. Seeds and plants and ideas brimming over to excess in one quarter may by this means flow over and be successfully diverted elsewhere. There are to be four meetings every year, and at each of them some famous garden or horticultural centre is to entertain and edify these distinguished visitors. The first meeting was held at the Ecole Nationale d'Horticulture in Versailles. What is described as a lively lunch was followed by a conducted tour of the school under the guidance of the president, Dr. Herbinet, and the vice-president, the well-known obstetrician, Dr. Chirie. In due course the members of this association were presented to Prof. Lecollier, who is in charge of the Ecole Nationale. He devoted three hours to his medical visitors, combining pleasure with instruction in

the true Sandford and Merton spirit. Among his oldest exhibits were three pear trees planted in the reign of Louis XIV. Later in the day a meeting was held in the large amphitheatre of the Ecole where the business of the association was discussed, and an account was given of the machinery devised for the exchange of horticultural products among the members. The next meeting will be held in a rose garden. The secretary-general, Dr. Dejust, of 58, rue Saint-Lazare, Saint-Ouen-L'Aumone, is to be congratulated on his success.

VIENNA

(FROM OUR OWN CORRESPONDENT)

AUSTRIAN OTO-RHINO-LARYNGOLOGISTS IN GRAZ

THE Austrian ear, nose, and throat surgeons, who were formerly almost without exception members of the German society of oto-rhino-laryngologists, have for the most part resigned their membership there, owing to the political and racial tension between the two countries. An annual congress takes place therefore in this country, attended only by the Austrian surgeons, together with their pupils and friends from abroad. This year the congress took place in the University Clinic in Graz; 200 members met and 72 papers were presented. The work done at the congress proved that the scientific standing of this society is not in the least hampered by its independence of Germany.

HOUSING

In a publication by the Vienna Municipal Board of Health details of the density of population and of housing have been very interesting to students of sociology. On March 22nd, 1935, there were in this city 59,785 buildings used for residence. They contained 613,436 homes, inhabited by 1,845,852 persons, or on an average, 3 persons per home. In 1910 this figure stood at a little over 4 persons. There were 63,315 open shops, 25,249 workshops, 27,117 storehouses, 15,308 offices, 6952 garages and stables, and 1702 artists' studios. There were 4500 uninhabited dwellings; 141,206 persons had classified themselves as "subtenants"—i.e., living only in a part of a dwelling. The greatest number living in one room was 9, but this was only in a few instances. There were 6 or more persons in a single room in over 2500 rooms. The number of childless couples is growing constantly, especially those who married within the last six years. This coincides with the alarming decline of the birth-rate, in which Vienna now heads the list of all the large European cities. It is also interesting to note that out of the total, 75 per cent. of the houses had both electric current and gas-supply, 2 per cent. only gas, 12 per cent. only electricity; the others had neither gas nor electric current. With the building of large municipal tenements in the place of slums, which began in 1919, public health has much improved. In these blocks every single dwelling has at least three parts: kitchen, bedroom, and sitting-room, every one with ample air and light, every window opening on a large airspace, and with all hygienic appliances. Vienna has now about 60 such blocks, accommodating over 10 per cent. of the city's entire population, and this has done away with nearly all the overcrowding.

GOITRE IN HOUSEHOLD ANIMALS

In the course of an extensive research on the incidence of goitre among the population of Austria the Ministry of Health has advised a search for goitre amongst animals. It is already known that in certain districts of Austria goitre is common in calves. The Ministry has now issued to all veterinary surgeons, as well as the inspectors of cattle markets and butchers' shops, a leaflet in which the following items are to be noted in all cases of animal goitre that they find: age, sex, pedigree, if possible the height at the withers, the circumference of the throat, the approximate size of the enlarged thyroid gland, its consistency, and any pathological conditions resulting from it. Furthermore, the investigator should try to ascertain whether there is goitre in the family of the animal or in the neighbourhood. Similar leaflets have also been issued to gamekeepers to obtain similar information about the deer, chamois, and stags. They also have to report any case of goitre observed in any other animal seen by them. The authorities desire to obtain this information about animals chiefly with a view to the possible use of iodised salt in agricultural and veterinary establishments. The use of this salt on a very large scale by the human population has had excellent results.

LUDWIG BRAUN

Prof. Ludwig Braun, who has died at the age of 69, held for more than a quarter of a century the post of head of the medical department in the Rothschild Hospital, which he had organised as a centre of training for the Jewish doctors who were unable, for various reasons, to continue their studies in the municipal or governmental hospitals. Prof. Braun had to abandon his original intention to be a surgeon because he was hypersensitive to iodine, iodoform, and other antiseptics used in his time. He took to the study of internal medicine and soon turned his attention to the problems of cardiac disease. He investigated the effects of digitalis on the heart muscle, the correlation between psychic conditions and the heart, and the effects of hypertonia on heart and kidney—decapsulation of the kidney in such cases was originally his idea. He was a keen experimenter and a shrewd observer; he was at the head of numerous philanthropic Zionist societies and for some time also of the Vienna medical faculty.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

PREVENTION OF DISEASE

THE report of the committee on the Scottish Health Services which was summarised in last week's LANCET has aroused widespread interest. One of the sections of the report concerns the value of proper nutrition in the prevention of disease. The importance of educating the public cannot be too strongly emphasised. The Society of Medical Officers of Health (Scottish Branch) in their evidence stated: "To be efficacious, health education should be as personal as possible. The family doctor would appear to be the most suitable person to undertake this work, were it not that his training is directed rather to the cure than to the prevention of disease, that he is seldom consulted until illness has actually developed, and that he cannot reasonably be expected to devote much of his time to work for which, under existing conditions, he can receive no recompense. Some change in the conditions of medical practice would appear necessary before the services of general practitioners as teachers of hygiene can be properly utilised." The report later states that "unless

medical training is such as to produce the preventive outlook, many of our recommendations for the development of health policy will be stultified."

Many teachers of clinical medicine feel bewildered by the suggestion that they neglect the teaching of preventive medicine. They look round their wards and ask themselves "How could these diseases have been prevented?" Many of them would have difficulty in giving a single clinic on the subject. They could only repeat from case to case that some authorities believe that if this patient had been properly nourished from birth and taught the elements of personal hygiene, this illness would never have developed. Admittedly the practitioner should know what constitutes a healthy diet and should know the principles of personal hygiene, but the known facts are easily learned and are widely known. The subject of preventive medicine seems to be surrounded by mystery, whereas the practical application of our present knowledge of the subject can be written on a few pages in a language which all can understand, and can be taught by any intelligent layman. The teachers of clinical medicine have some reason, therefore, for feeling that the first step in the development of preventive medicine lies neither with them nor with the general practitioner, who is seldom consulted on the matter. They feel that the public as a whole should be educated by propaganda. Every householder has received a copy of the Highway Code, should he not also be given a Health Code? The medical profession will, of course, continue to elucidate the causes of ill-health and disease, but the responsibility for educating the public should not rest primarily on the shoulders of the practitioner, who is consulted by the public about disease, not health.

EDUCATION OF DEAF AND DUMB CHILDREN

At the annual meeting of the Edinburgh Royal Institution for the Education of Deaf and Dumb Children held on June 29th, the directors' report expressed satisfaction that the Government had accepted an amendment to the Education (Scotland) Act now before Parliament, making it mandatory on local authorities to give every deaf child in Scotland from the age of three the special educational facilities his affliction required, provided the parents consented. The adoption of the report was moved by Mr. Allan Chapman, M.P., who remarked that the amendment referred to would not have reached the Statute Book but for the progressive outlook of the Scottish Office. In this matter they were far ahead of England, and he did not doubt that in course of time England would take a leaf out of their book, and put into their own Act a similar clause. The adoption of the report was seconded by Sir David Wilkie.

PRESENTATION TO PROF. MUNRO

Prof. Munro, who retired from the chair of the practice of medicine in Glasgow University on June 30th, a position he had occupied since 1913, was presented on his retirement with a silver salver bearing the signatures of all the resident physicians who had been associated with him in his work in the Western Infirmary. At the presentation, which took place in the board room of the Western Infirmary, the speakers made reference to the high position which Prof. Munro occupied in the profession, and to the affection with which he was regarded by the students who had passed through his hands.

SHORTER WORKING WEEK FOR NURSES

From Sept. 1st the staffs of the mental institutions under the corporation of Glasgow are to have a 48-hour working week. The cost of operating the new system will be £12,394. A new nurses' home is being built to accommodate the extra staff.

IRELAND

(FROM OUR OWN CORRESPONDENT)

PROPOSED RADIOLOGICAL INSTITUTE FOR DUBLIN

THE Hospitals Commission recently received a deputation from the Radium Committee of the Royal Dublin Society to discuss a proposal to establish an institute for the development of the use of radium in the treatment of cancer and other diseases. The deputation consisted of Sir Edward Coey Bigger, chairman of the Radium Committee, Prof. T. G. Moorhead, Drs. O. Murphy and O. Chance. It was stated that at present the Royal Dublin Society supplied radium (or radon) for the treatment of some 600 cases annually, but was capable of meeting a much greater demand if treatment were organised and its value appreciated. The institute should be independent of existing hospitals but should work in coöperation with them, and it should not be confused in the public mind with a cancer hospital. It was possible that one of the hospital buildings at present in existence, should the proposed amalgamation of some of the hospitals be carried out, might be made available as premises for the institute. Sir Edward Bigger suggested that a start should be made at once by the appointment of an expert in radium therapy, under whose guidance medical workers might be trained in technique. The Commission gave a lengthy and sympathetic hearing to the views submitted by the deputation.

PROSECUTIONS UNDER THE CRIMINAL LAW AMENDMENT ACT

Section 17 of the Criminal Law Amendment Act, 1935, made it a criminal offence "to sell, or enforce, offer, advertise, or keep for sale or to import or attempt to import into Saorstát Eireann for sale, any contraceptive." The first prosecutions under this section of the Act in Dublin have recently been undertaken, and in several cases the maximum penalties have been imposed. In one case fines amounting to £250 were imposed together with six months' hard labour, and other terms of imprisonment in default of payment; in another fines amounting to £200 with six months' hard labour; and in a third a fine of £100. Notice of appeal was given in one case. The magistrate expressed the hope that the putting into effect of the sections of the Act would have a salutary effect and that they would not be troubled with such prosecutions in future.

PLAISTOW MATERNITY HOSPITAL.—A new wing of this maternity hospital and the district nurses' home which has been erected in its grounds have been opened by the Mayor of West Ham. There are 60 beds for patients, and the extensions, which cost about £10,000, will provide an additional 36 beds for the nursing staff.

VICTORIA HOSPITAL, BLACKBURN.—The first portion of the work at the new hospital is nearly finished. It is estimated that the total cost will be £170,000, and when the first contracts were signed £60,000 had been received, and a loan of a further £60,000 had been promised from the corporation. Since then upwards of £35,000 has been collected.

GRAINS AND SCRUPLES

Under this heading will appear week by week during the summer the unfettered thoughts of doctors in various occupations. Each contributor will be responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A WEST-COUNTRY PRACTITIONER

EVEN the motor-car and the motor-ambulance have not quite eliminated the possibility of dramatic emergency surgery in outlying cottages, although the number of occasions on which it is necessary to close perforated gastric ulcers on the kitchen table by candlelight must be dwindling from year to year. Of all emergencies internal hæmorrhage is the most pressing and such patients will stand moving less than any. The ruptured ectopic, if dealt with at all, must be dealt with on the spot. If sent seven miles by ambulance to hospital it will on arrival be nothing more than material for an interesting post-mortem. A cottager patient of mine living five miles from me and the same distance from the hospital thoughtlessly ruptured her ectopic one Saturday afternoon when I was playing cricket. When I saw her 20 minutes later she was desperately ill. I telephoned to a surgeon, a man of few words, who said he would be there in a quarter of an hour. He was, complete with nurse and a light operating table. The bedroom floor was on a slant—to get from the bed to the window you had to walk uphill—and we had some difficulty in fixing the table steady. I anæsthetised the patient and within half an hour her abdomen had been baled out, her tube ligatured and removed, and she was back in bed having rectal salines. The nurse was left in charge and the patient made an uneventful recovery. (Two years later she had a normal delivery and puerperium.) Her husband was a farm labourer and, in gratitude to the surgeon, offered him all his savings, a matter of £5.

* * *

"A bottle of medicine for father," she says.
"'Tis white and not easy to pour" . . .
"How is he?" I murmur. She tells me.
I ask her no more
But hand her the medicine for father,
Who's rising four-score.
The interview then being over
I show her the door.
A trivial business you say? I agree . . .
And a bit of a bore . . .
Still that's what I spent seven years at a hospital for.

* * *

In addition to being guide, philosopher, friend, priest, father confessor, and lawyer, a country practitioner may also be called upon to be a vet. One winter's day I was summoned urgently to an outlying farm and, arrived there, was met by an agitated farm-wife. "Is maister bad, then?" said I, knowing the language. "Oh," she replied, "'e's to bade with a bit of a vluey-cold but us baint troubled 'bout 'ee—'tis the cow's bad!" It appeared that the best cow had gone into labour on a day when the vet. was unobtainable. What was worse, the pregnancy was multiple and the presentation abnormal. I was led to the byre and there, surrounded by sympathetic farm hands, lay the patient and from her capacious vagina protruded the limp end of a calf's tail. Would I please to advise? Thinking rapidly in terms of human midwifery, I suggested bringing down a leg. The suggestion met with approval and the senior hind stepped forward, honestly and pathetically anxious to do his best for the old cow. "Are your hands clean?" I asked. "Ees zor," he answered, showing me two grubby and ham-like structures which he first wiped on his corduroys. I decided that the cow would have a better chance if I delivered her myself, so "washed up" almost up to the shoulder and inserted my hand, forearm, and most of my arm. To one accustomed to working within the narrow confines of the human genital tract, I cannot describe the satisfaction of carrying out obstetrical manipulations in the roomy vagina of a cow. If necessary two hands can easily be brought into play, and the operation of bringing down a leg is absurdly simple. Having done so much I advised leaving the cow to deliver herself, the calf being certainly dead, but this advice was received with head-shaking. A cow, I was assured, could not stand a long labour, and I was urged to bring down the other leg forthwith, which I did, again without difficulty. A rope was then knotted round the calf's fetlocks, four good men and true laid hold of it, and it was speedily delivered stillborn. An hour later its twin was born alive, and the cow had an uneventful puerperium.

Now contrast the simplicity of this with the difficulty of another piece of animal midwifery. A woman doctor with small hands was asked to see a Sealyham bitch having difficulty with her labour. Three puppies had been born naturally after which there had been delay, although pains had continued and the uterus was certainly not empty. A veterinary surgeon had been called in who had made an examination, advised expectant treatment, and gone away. Vaginal examination was very difficult in so small a patient, but the tip of the finger could feel what appeared to be a ragged cavity edged with spicules of bone presenting at the os. This was at first taken to be a crushed-in head, but bimanual examination under chloroform anæsthesia revealed a head belonging to the same body above the symphysis. The condition was then correctly diagnosed as one of transverse lie, the head was with great difficulty manipulated into the pelvis, and a stillborn puppy finally delivered. The vet. had avulsed a fore-limb and the ragged cavity felt was the empty axilla. The patient was under chloroform for three-quarters of an hour in all. When she came round she gave birth to two more puppies, both alive and well. Several days later she developed jaundice, presumably due to delayed chloroform poisoning, from which she soon recovered completely.

* * *

Though frequently enjoined to count our blessings, most of us still prefer to recount our curses. Humanum est murmurare and there is a satisfaction almost sensual to be had from feeling hard done by, always provided that we can tell somebody about it. One of our many exasperations is that we general practitioners lead lives singularly lacking in even tenor. Unlike the consultant physician or, more blessed still, the dentist, we cannot work by appointment, for things are constantly happening which necessitate radical changes in our daily plan of work. We are always too slack or too busy, or so it seems. On our nominal half-holiday we sit edgily near the telephone willing that it shall not ring, and, almost with a

feeling of guilt, we arrange to play golf or cast a fly. Immediately, as if an expression of divine anger, some fellow gets run over, or his wife goes into labour or his child develops a spectacular rash; or all three happen at once. And it is the same story with surgery hours or the round of visits. Either they are arid and commonplace, or else overburdened with interesting material on which we would like to spread ourselves—if only we had time. Always we are at grips with the clock. If the author of the phrase about life being one damned thing after another was not a G.P. he ought to be elected an honorary one forthwith. The effect of this irregular existence upon the individual doctor varies with his temperament. Some of us become irritable, with the characteristic martyr-like facies; others acquire a saintly resignation. Too often we become restless or energetic in a rather unsatisfying way, but since mankind cannot and womankind, no doubt from perversity, will not take ill according to a time schedule, the problem seems to be insoluble. A lumpy life is one of the little crosses we have to bear, a sort of compulsory Christianity; but it is too much to expect us to grin while bearing it, just as it is too much to expect our patients to make allowances for its effect upon our tempers.

* * *

With the increase of psychological knowledge, the word "malingering" is steadily disappearing from medicine. What used to be called malingering is certainly very rare here in the West. If not at work the ordinary farm hand is bored to extinction and, although he may be unduly concerned about some trivial disability, he will go to work again at once if reassured about himself. Being quite convinced about this rarity of malingering I have learnt to watch carefully the patient who is full of symptoms but lacking in physical signs, for I find that anybody who comes into the surgery so often as to be a nuisance generally turns out to have something serious the matter with him in the end.

* * *

The news that the King has given permission to the Yeomen of the Guard to shave off their beards reminds me of a medical reason for growing a beard which was once given me by a patient. I once attended an old man with a luxuriant beard reaching almost down to his umbilicus. Having duly admired it and resisted the temptation to ask him whether he slept with it inside or outside the bedclothes, I asked him what had prompted him to grow it. He told me that as a young man, back in the bad old pre-tonsillectomy days, he had been a martyr to sore-throat and "squingy." His old family doctor had advised him to grow a beard and he had never since had a sore-throat. Beards may also be an economy, as I discovered at the annual conversazione of a learned society where I followed two old gentlemen in their tour among the microscopes, fascinated by the length and solid structure of their beards, and was rewarded when one guffawed in appreciation of his crony's jest. He raised his head to roar with laughter, and below that brave beard the stud shone out; there was no tie.

PUBLIC HEALTH

Future of the Isolation Hospital

AT the annual congress of the Royal Sanitary Institute, held at Southport from July 6th to 11th, Sir Weldon Dalrymple-Champneys addressed the section of preventive medicine. He explained that the views which he expressed were purely personal ones and did not necessarily represent the attitude of the Ministry of Health. The following is an abridged account of his communication:

Has the isolation hospital got a future? It certainly has a past—a past full of hope, disappointment, mistakes, and gradual but far-reaching changes. Would it ever have existed if we had known then what we know now? Like modern drainage, it owed its existence (or at any rate its time of appearance) to false theories. The belief that diphtheria (to take one instance) is due to bad drains helped to give us greatly improved amenities of life and safeguarded our water-supplies (not from diphtheria but from the enteric group of diseases), but the belief that all cases of infectious disease originated from contact with other clinical cases and could be prevented by imprisonment of the victims has done little if anything to reduce the incidence of such diseases, and the only unintentional benefit it has conferred has been to secure better treatment of those victims, though such treatment has often been available too late and the patients have sometimes contracted infections in the isolation hospital which they would probably have escaped outside. Both modern drainage and isolation hospitals have been enormously expensive, and much of the money might have been spent to better purpose.

There are still many educated people in this country who believe in the diphtheria-from-drains theory, but there are many more who are completely ignorant of the part played by healthy carriers in the spread of infectious diseases, the dangers to scarlet fever patients in a ward from other patients also suffering from scarlet fever but harbouring different strains of hæmolytic streptococci, the harmlessness of the skin peeling after a scarlet fever rash, the fact that the "whoop" bears no relation to infectivity in whooping-cough, &c.

Admittedly we who are engaged in protecting the public health know all about this, but have we made our outlook or our practice conform to this new knowledge? Don't we still provide and maintain large infectious diseases hospitals which are half or more than half empty in non-epidemic periods and are often situated so far from the patients' homes that their parents cannot visit them? Don't we still deal with infectious patients as if there were danger to anyone coming within a quarter of a mile of them? Don't we still take children suffering from a simple mild attack of scarlet fever and expose them in large wards to constant bombardment by a whole variety of hæmolytic streptococci to which they are strangers and so give them every opportunity of acquiring complications which they would probably have escaped in their own homes? Don't we still select for isolation from a group of persons suffering from a streptococcal infection those only who show a punctate erythema, which we now know to be no criterion of the severity or infectivity of the case and which is indeed regarded by some experienced clinicians as a favourable sign, leaving those without a rash to hand on the infection and to develop, perhaps, serious complications themselves? Don't we still allow many general practitioners to cherish a belief in the value of the report on a single diphtheria swab in diagnosing a disease?

To stimulate discussion I will call attention to certain aspects of this question: the education of the public; the selection of cases for admission to isolation hospitals, and the form and location of accommodation provided.

Among the matters upon which the public urgently need education are: the seriousness of measles and whooping-cough on account of their respiratory complications; the possibility of cardiac, renal, and other complications following a sore-throat without a classical scarlet fever rash; the superior efficiency of current as opposed to terminal disinfection in infectious disease treated in the home; the predominant rôle played by droplet infection rather than fomites in the spread of influenza, measles, whooping-cough, &c., and the special danger of infecting others when in the early stages of these diseases.

No one is prepared to advocate the large increase of isolation hospital accommodation which would be necessitated by the admission to hospital of all cases of measles, even if such a step were desirable, but it is worth while inquiring whether some of the accommodation now reserved for scarlet fever and diphtheria might not be better utilised for the treatment of those cases of measles in which complications have set in, are anticipated or in which, owing to the age or physical condition of the patient, special care is indicated. So long, however, as scarlet fever and diphtheria are notifiable and measles is not, so long as measles is regarded by the public as a far less serious disease than the other two, and so long as a punctate erythema of a certain distribution is used as the criterion of infectivity in hæmolytic streptococcal infections, adequate accommodation for measles cases is not likely to be available. A satisfactory solution can only be found by consideration of the prophylaxis and treatment of infectious diseases *as a whole*, not by minor adjustments.

FORM AND LOCATION OF ACCOMMODATION PROVIDED

When I wrote my memorandum for the Ministry on public school sanatoria in 1928 [1] cubicle isolation was still somewhat of a novelty, but the views then expressed as to the advantages of this system have since found wide acceptance. The system has not yet been exploited to the full limit of its usefulness, and the great advantages of this system in the direction of flexibility, economy of space, and prevention of cross-infections are likely to do more than counterbalance the extra initial expenditure involved.

Lastly, I would ask you to consider whether in the light of modern knowledge and experience accommodation for infectious diseases is always best provided in ad hoc isolation hospitals. For large towns or urban areas the answer is "yes"; but is not a great deal of money wasted at present in the provision and maintenance of isolation hospitals which are half or more than half empty most of the time? The reduction of the number of such hospitals with the provision of increased facilities for transport has the drawback of removing many patients a long way from their homes and parents and of the necessity for elaborating facilities for diagnosis and treatment at the surviving hospitals. In Denmark and other countries a different solution has been found—the provision of an isolation block as an integral part of a general hospital serving a comparatively limited area. Such blocks are often surrounded by the other blocks of the hospital in which medical, surgical, and maternity cases are treated, and, though often separated from such other blocks by a space of only twenty to thirty yards, the spread of infection is practically unknown, thanks to a simple but efficient disinfection ritual carried out by the staff. In such hospitals the patients suffering from infectious diseases have all the advantage of immediately available technical facilities for diagnosis and treatment, whilst the economy so effected, and the effect of such a system in cultivating the right attitude of mind towards the infectious diseases, are obviously very valuable considerations. The future of the isolation hospital can only be determined satisfactorily by careful consideration of the whole problem of the prophylaxis and treatment of infectious diseases in the light of modern knowledge. Let us put aside all preconceived ideas and old prejudices and look the facts squarely in the face.

[1] Ministry of Health Memo., 1928. H.M. Stationery Office.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 27TH, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1477; diphtheria, 885; enteric fever, 18; pneumonia (primary or influenzal), 606; puerperal fever, 33; puerperal pyrexia, 112; cerebro-spinal fever, 16; acute poliomyelitis, 5; encephalitis lethargica, 4; dysentery, 22; ophthalmia neonatorum, 81. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 3rd was 3967, which included: Scarlet fever, 1025; diphtheria, 702; measles, 1027; whooping-cough, 528; puerperal fever, 15 mothers (plus 11 babies); encephalitis lethargica, 285; poliomyelitis, 0. At St. Margaret's Hospital there were 20 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 32 (12) from measles, 3 (1) from scarlet fever, 16 (4) from whooping-cough, 17 (0) from diphtheria, 32 (13) from diarrhœa and enteritis under two years, and 17 (3) from influenza. The figures in parentheses are those for London itself.

Hull reported 5 deaths from measles, no other great town more than 2. Liverpool had 3 deaths from whooping-cough, Sheffield 2. Deaths from diphtheria were reported from 15 great towns, 2 each from Halifax and Sheffield.

The number of stillbirths notified during the week was 278 (corresponding to a rate of 40 per 1000 total births), including 38 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. E. St. G. S. Goodwin to *Pembroke* for R.N. Hosp., Gt. Yarmouth, temp.

Surg. Comdr. E. L. Markham, O.B.E. to *President* for R.N. and R.M. Recruiting Headquarters, temp.

Surg. Lt.-Comdr. (D) J. L. Lean to *Drake* for R.N.B.

The following Surg. Lt.-Comdrs. (D) to be Surg. Comdrs. (D): F. W. Watt, S. E. Brown, R. M. Finlayson, and L. B. Osborne.

Surg. Lts. J. M. T. Reese to *Terror II.* for Singapore Naval Base; and E. B. Bradbury to *Pembroke* for R.N.B., and to *Cumberland* (on commg.).

Surg. Lts. (D) H. P. L. Rhodes and S. J. Atkinson to *Drake* for R.N.B.; E. C. Jenet and A. G. K. Heberlein to *Victory* for R.N.B.; H. B. Watson to R.M. Infirmary, Deal; and K. E. J. Fletcher to *Cumberland*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdrs. C. C. Ungley to *Pembroke* for R.N.B.; W. D. M. Millar to *Vernon*; D. M. Craig to *Excellent*; and G. M. Tanner to *Dryad*.

Surg. Sub-Lt. W. S. Miller promoted to Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Memorial Prizes.—The Leishman memorial prize for 1935 has been awarded to Major J. S. K. Boyd, R.A.M.C., and the Alexander memorial prize to Major James Biggam, R.A.M.C.; while the North Persian Forces memorial medal has been awarded to Dr. A. A. Forbes Brown of the Colonial Medical Service.

ARMY DENTAL CORPS

Capt. U. J. G. Dancer, having attained the age limit of liability to recall, ceases to belong to Res. of Off.

TERRITORIAL ARMY

Capts. A. O'Hanlon and E. A. L. Murphy to be Majs.

Lt. W. I. C. Morris (empld. Edinburgh Univ. Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Capt.

Lt. R. D. Burn to be Capt.

C. P. Mann to be Lt.

C. H. Imrie (late Off. Cadet, St. Andrews Univ. Coll. Dundee Contgt., Sen. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Cols. P. Moxey, T.D., E. B. Steeds-Bird, D.S.O., T.D., A. M. H. Gray, C.B.E., T.D., A. Callam, D.S.O., and S. G. Barling, C.M.G., T.D., having attained the age limit retire and retain their rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE

Group Capt. H. A. Treadgold, C.B.E., is placed on the retired list on account of ill-health.

Flight Lt. J. C. Neely is promoted to the rank of Squadron Leader.

INDIAN MEDICAL SERVICE

Maj. R. McKinlay has vacated his appt. in India.

COLONIAL MEDICAL SERVICE APPOINTMENTS

Dr. A. McK. Fleming has been appointed medical officer, Gibraltar; Dr. R. G. M. S. Macgregor, professor of physiology, Malaya; Miss L. J. Ogle, M.B., lady medical officer, Nigeria; Dr. A. L. F. Thomson, medical officer, West Africa; Dr. J. V. Landor, physician and registrar, General Hospital, Singapore; Dr. R. B. MacGregor, deputy director of medical services, Straits Settlements; and Dr. D. E. Wilson, pathologist to the medical department, Tanganyika.

THE MEDICAL ART SOCIETY

SECOND ANNUAL EXHIBITION

(FROM A CORRESPONDENT)

EVIDENTLY doctor artists are open-air folk. Out of 121 pictures at the second annual exhibition of the Medical Art Society, now being held[1] at the House of the Royal Society of Medicine, nearly 100 are landscapes or open-air subjects of some sort. There is but one portrait painting, a child study in oils by Sir Leonard Hill. And "Bathers," a river scene by Charles Pannett, is almost the only subject in which figures play a prominent part. Perhaps it is not possible to view human personalities medically and æsthetically at the same time; or is it that most medical art is a reaction from consulting-rooms and hospitals to deserted shores, wide mountain spaces, and quiet country lanes?

The general level is of good amateur standard. A few exhibits are of real merit—for instance, John Hay's street scenes. Only one or two verge on eccentricity. Whether he meant it or not, S. Hales's "Art under the Microscope" is pure Surréalism. He has depicted some half-dozen slides of crystals and bacteria as seen through the microscope, and mounted them in one frame. Any disciple of M. Dali's would enthuse about it if it had been called something like "Moons in Convulsion," or even simply "Composition."

A certain topicality is not lacking in the choice of subjects. Robert Worthington's "On the Rocks; the Herzogin Cecilie" was a record well worth making. "T'ang Lady" by Arthur Edmunds is a reminder of the exhibition of Chinese Art earlier this year, and shows a pottery tomb figure whose reddish glazes are set off against a blue background. A subject with a lively enough title is "Motorists Attacking a Belisha Beacon," by Rupert Hallam—though this sketch of male figures in violent and whirling movement might just as well have been called "Italian Journalists being thrown out at Geneva" or "Rounding up Bandits in Manchuria." Holmes Spicer's sketch of "Waterloo Bridge" might one day be of some "documentary" interest in a collection of pictures of changing London.

The chief exhibitors of oil paintings are H. Elliott Blake and Sir Leonard Hill. Elliott Blake not only knows his medium, and avoids the muddiness of colours to which many of his colleagues are prone, but he has a good sense of design. This is well shown in his "Tarred Barn." He is successful, too, in his "Battersea Power Station," showing Sir Giles Scott's twin towers as seen from the Chelsea Embankment. His two studies of the Marylebone-road and Fulham-road are happy impressions. Sir Leonard Hill obviously gets pleasure from painting his animals and birds. "Rabbit, feeding" shows a solid, fluffy beast, happily munching; with the vertical signature in red it suggests a Chinese animal painting. In "Sitting Hen," a pastel, he naturally found a good sitter. But to paint his fighting cockerel in the picture called "Vanquished," showing the bird cowering against a wall, he had to resort to slight hypnotism, as he explained to some friends at the private view.

"Peaceful Evening" by W. Rushton is a decorative little subject because of its harmonious colouring. And there is attractive colouring too in "The Road to Killary Harbour" by Edith Magill. Yet as an impression of the spaciousness of mountain scenery "Sunrise in Scotland" by T. Anwyl Davies is more powerful and suggestive. Those who have never seen Scottish mountains never quite believe in them when painted; but Sir David Cameron has accustomed us to accept these tapestry-like effects of colour, and the play of sunlight gleams that "flatter the mountain tops with sovereign eye."

Of H. B. Maitland's canal scenes the best is "Deansgate" and the worst "Bridgewater Canal." He has good ideas but lacks the art of conveying light and atmosphere. Technically one of the most accomplished oils is Emanuel Miller's "Flower Piece." In front of a vase of brilliant irises is a sculptured group of a harlequin and pierrette in white. This was a fairly ambitious still-life subject, but Dr. Miller overcomes the difficulties convincingly. He is a versatile artist, too, as he also shows a very capable bronze head of Mrs. Betty Miller.

Mention must be made among the oil paintings of Helena Wright's small study entitled "A Silver Morning in Norfolk," which is quite Whistlerian in feeling. T. H. Somervell's passion for mountaineering is represented by an oil "In the Carpathians" and a water-colour called "Sunshine and Cloud in the Tyrol."

Three artists catch the eye in the water-colour section. There is John Hay, who would be a really first-rate artist if his colouring were as good as his drawing; there is John Parkinson, who understands many of the tricks of the good water-colourist; and there is Sir Squire Sprigge whose studies of spring foliage and fresh green turf have a youthful quality. A little less statement and a little more suggestion would have made "Sheep-haven Bay" by J. F. Robinson, already a good landscape, even better. And his "Stack Yard," with its clever painting of an iron-roofed barn, is also meritorious work. "The Windmill, Blakeney" by Hubert Turnbull is the kind of subject which J. S. Cotman could depict so superbly, but it is risky to invite comparison with a great master, even in the humble medium of water-colour. "Astypalea" and "Corfu," both by E. B. Waggett, have considerable topographical interest. Two other far-removed subjects are "The Hypostyle Hall, Karnak" and "The High Atlas in the Early Morning Sun," both by P. H. Manson-Bahr. One of the best of a batch of pictures of English scenery is E. A. Barton's "Fairlight Glen," with its receding cliff path. For the most part England and especially Devon and Cornwall are the happy hunting-grounds of doctors with a paint brush.

Two Cotswold subjects, both well chosen, are shown by C. W. Morris. One depicts an interesting jumble of slate roofs behind which stretches out a landscape of patterned fields. Another Cotswold picture is of an inn called "Ye Olde Corner Cupboard." In this C. Lovatt Evans has obviously been attracted by the quaint stone architecture with its massive buttresses. Sea and shore sketches above the average in merit are "From Worthing Pier" by E. A. Barton, and "Gweedore," a harbour scene by R. Foster Moore. "Latimer Park" by C. Price-Jones is notable

[1] The exhibition will be open from 2–6 P.M. (Saturday excepted) until July 14th.

for its treatment of the reflection of trees in a lake. W. G. Barnard's "Church Farm" and "Monday, Brittany" are too green to be true. And "Middlesex Hospital Nurses' Home" by S. Hales is too true to be good; it is the most matter-of-fact and severely descriptive painting in the exhibition. In Leslie Powell's pastel of "Chrysanthemums" a good piece of work suffers because the background too closely resembles the colour and texture of the flowers.

Outstanding among the drawings—they should really have been classed separately—are H. A. Lake's two etchings of horses. "Summering" shows a group of horses out at pasture, and "Haute Ecole" a horse and rider. "War" is a symbolical drawing of a dæmonic head by E. Puddy, in which the idea of Mars is made as suitably repulsive as possible. M. B. Ray shows three pen sketches of the kind of architecture to be found at Oxford and Cambridge. The effect of his fine penmanship is not unlike that of an early engraving. Reference has already been made to Rupert Hallam's "Motorists Attacking a Belisha Beacon." He has two other drawings, "Evening at the Fair" and "Conversation Piece," and it may be said with some assurance that he is the most modern in feeling of any of the exhibitors in his disregard for outward appearances and in his effort to express the emotions of an incident in terms of draughtsmanship.

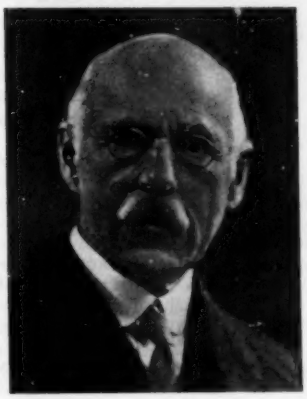
There are three pieces of sculpture shown, Emanuel Miller's head of Mrs. Betty Miller, mentioned above, and two plaster figures by E. S. Tait of a seated woman and a standing man, competently modelled.

Altogether there are 124 works by 53 artists, and the view, expressed by a number of visitors, was that the standard is appreciably higher than last year's exhibition.

OBITUARY

THOMAS WILLIAM PELHAM LAWRENCE, M.B. Lond., F.R.C.S. Eng.

Mr. T. W. P. Lawrence, who died on June 26th at Little Common, Bexhill, had only recently moved from Tadworth, Surrey, where he had lived since his retirement 12 years ago from his position as pathologist to University College Hospital. It was this hospital at which he was a student, and after qualifying in 1887 and spending a few years in general practice, his leaning towards pathology found its opportunity when he was elected curator of the museum there in succession to Charles Stonham. He was later appointed lecturer on morbid anatomy in the medical school and pathologist to the hospital, holding these appointments until 1923 when he retired under the age limit. But his active work did not end then, for on the death of S. G. Shattock in 1924 Lawrence was chosen by the council of the Royal College of Surgeons to help Cecil Beadles in rearranging and revising the series of special pathology. Later he was given the title of acting pathological curator, a post which he held until last year.



MR. T. W. P. LAWRENCE
[From U.C.H. Magazine

Throughout his career, a colleague writes, Lawrence's work was carried out with conspicuous thoroughness and ability, not only in the discharge of his routine duties but also in the many pathological communications for which he was responsible. Whilst curator at University College he was jointly responsible for new editions of the surgical and obstetric specimens, and he arranged all the specimens in the museum of the new medical school. He was joint author of the article on tumours in Choyce's "System of Surgery," and the post-mortem records of the hospital for many years stand as a memorial to the excellence of his work. As a teacher Lawrence gained the full confidence of the students. His lectures and demonstrations were excellent, but he was at his best when two or three men came to his room for a friendly discussion of the subject in hand. Valuable aids to Lawrence's work in morbid anatomy were his wide knowledge of the literature and his skill as a draughtsman. Both these he placed most readily at the service of his friends. Many of the illustrations of the bones in the tenth edition of Quain's "Anatomy" are from his pencil. His leisure time, and there was not much of it, was spent in his garden, and it is interesting to recall that he was an expert in that almost lost art, the use of the scythe. In this he was so skilful that he could mow a lawn as closely as the best mowing-machine.

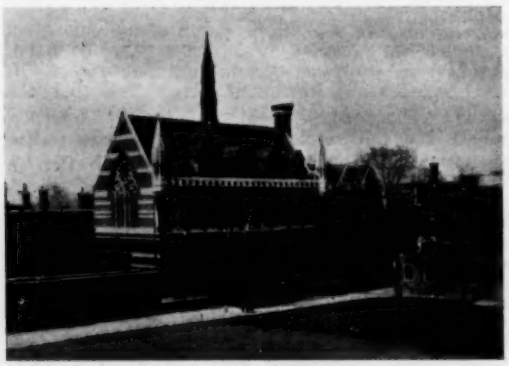
Of Lawrence's personality it is difficult to speak without appearing to exaggerate. He did not carry his heart on his sleeve, but all his friends will agree that he was a man of sterling worth, modest without being weak, and free from the slightest tinge of humbug. Those who were present will not forget his delightful speech after the dinner when a presentation was made to him by his colleagues on his retirement.

A. E. B. writes: "Drawn by T. W. P. Lawrence" under pictures of bones in Quain's "Anatomy" was my first introduction to a remarkable personality, and it was something of an experience about 20 years later to meet in the flesh and as a colleague the man for whose artistry I had conceived a romantic admiration as a student. And there was no disappointment in ten years or so of close association. He was quite different from the ordinary run of pathologist and old-fashioned in the best way—neat in his clothes and his habits, reticent, courteous, unselfish, not given to vaunting himself, capable of complete loyalty to what he disliked, and horribly careless of himself in his post-mortems, for he would dissect a fatal osteomyelitis without gloves of which, with most other modern changes, he did not approve. He had a thorough knowledge of museum work and morbid anatomy which he presented as a system of established truth in a way which was always acceptable to his students. If he made few additions to the printed flood of progress, he served his school and hospital well and earned the respect of everyone with whom he came in contact and the affection of those who knew him well enough.

Mr. Lawrence is survived by his widow and an only daughter.

THE MEDICAL COLLEGE OF ST. BARTHOLOMEW'S HOSPITAL

THE opening of the new medical college of St. Bartholomew's Hospital marks the beginning of a new period in the history of that institution. This is an age of rebuilding, and while the hospital itself is slowly taking on its new form and occupying some of the space vacated by the preclinical departments, the new college has arisen in and around the buildings of the old Merchant Taylors' School in Charterhouse-square. Collected on one site from the cramped and scattered quarters previously occupied, the preclinical departments seem to have settled down rapidly and the social advantages of the new college are evidently appreciated. It is appropriate that the official opening should have coincided with celebrations of the centenary of the University of London, for the importance to a federal university of having well-equipped and up-to-date units as its constituent schools needs no emphasis.



The Great Hall.

The Refectory in the Great Hall.

At the conversazione held on July 2nd at the college the guests were received by its president, Lord Stanmore, and its dean, Mr. W. Girling Ball, and Mrs. Ball in the great hall, and from there were invited to inspect the buildings, in which a series of demonstrations representative of the work of each department was arranged. The visitor on tour would observe that the main building of the old school remains the chief building of the new college, housing the panelled hall (which is used not only on grand occasions but every day as a refectory for students and staff), cloakrooms, common rooms, administration quarters, and library. Part of this building has been converted to house the physiology department, consisting of two lecture theatres, an experimental laboratory, a commodious operating theatre, and animal rooms, and, besides the professor's rooms, six research rooms. The biochemistry block is a completely new structure and is large enough to accommodate in comfort in the laboratory 114 students, a whole year's class. The chemistry department and almost all of the physics department are housed in the original school buildings, skilfully converted to present needs. They are no less spacious and well-found than the departments in the ad hoc buildings and the supply of research laboratories is no less adequate. A gymnasium and squash courts complete the north wing.

Across the grass, past the proposed site of the residential college, the tour ends with the most impressive of all the buildings, as far as detailed planning is concerned. Here there is an attempt to express a philosophy in brick and stone; anatomy is conceived in its broadest sense, as dynamic rather than static, with embryology as its basis. Special attention is paid to neurology, which is for the average student the most difficult part of the subject and therefore the most likely to be neglected. The departments of anatomy and biology are housed in the building which formed the head master's house and the boys' refectory when the building was still in the possession of the Merchant Taylors. The two ground floors were altered and subdivided to accommodate

The Physiology Lecture Theatre.

The Biochemical Laboratory.

the department of anatomy and an additional floor was added to accommodate the department of biology. The anatomy department was completed by the provision of a new building containing a dissecting-room, lecture theatre, prosectorium, and embalming-room. The basement is occupied by an elaborate photographic department, specially arranged for photomicrography, a tissue culture laboratory, and an artists' modelling-room. On the ground floor is the fine dissecting-room, where Prof. H. Woollard seems to have succeeded in his quest for provision for almost surgical cleanliness and for shadowless lighting. The room is lit by day by a north light, and is lined with white tiles, with a red-tiled floor: the artificial lighting is extremely efficient. Included in the walls of this room is the doorway of a Carthusian cell erected in 1371. A short passage leads to a lift, which communicates with the embalming-room; this is a spacious chamber cooled and artificially ventilated, on one side of which are tiled cupboards capable of holding 90 bodies. By the side of the dissecting-room are two theatres, a small one for classes of 50 or 60 students and a large one, equipped with a projector room and screens, to hold 200 students. Nearby is the X ray room, and the student is encouraged to study the X ray appearances of his "part" both on the screen and in films, of which it is

The Dissecting-room.

intended that he will carry away a complete set illustrating the normal anatomy of the body. Visitors on July 2nd were invited to demonstrate the movements of their hearts, ribs, and diaphragms to their friends and at least one member of the consulting staff of the hospital allowed this intimate exposure.

The museum is attractively arranged, each system of the body in its own bay with a chair and a table and abstracts of relevant literature. Specimen, drawing, photograph, photomicrograph, X ray film, show all that can be depicted of the biological history, the development, and the adult form and structure of each system, together with such topographical details as are of scientific interest or practical value. A neurological laboratory, and on the first floor histological and biological laboratories and rooms for lecturers and demonstrators complete the building. On the top floors lives the warden of the college, once more, after many years, resident on the spot.

There was ample room for the 800 guests who assembled at this inaugural party. They were clearly impressed with what had been achieved, with the facilities offered for the social as well as for the scientific life of the students, and with the ample space for expansion in the future. The residential college, which will cost another £30,000, not yet budgeted for, is the next step towards completion. Meanwhile of the £200,000 at present required, £178,000 has already been collected, and of this £55,000 has been subscribed by Bart.'s men.

It is an open secret that it is to the drive and determination of the dean that the successful fruition of an ambitious and seemingly impossible scheme is mostly due. He has received loyal backing and all connected with the college must have felt pride in the prosperity and perennial youth of one of our oldest medical foundations.

LONDON UNIVERSITY CELEBRATIONS

THE magnificent entertainments organised by the City of London and the London County Council in honour of the centenary of the University of London afforded little opportunity for intimate talk and it was at the smaller functions last week that the delegates came into personal touch with the members of the university.

London (R.F.H.) School of Medicine for Women

Among the most friendly and informal of the festivities arranged was a luncheon held in the Common Room of the London (R.F.H.) School of Medicine for Women on July 2nd. The guests of honour were the Earl of Athlone, Chancellor of the University, Mr. Oliver Stanley, M.P., President of the Board of Education, Sir Alan Garrett Anderson, Member of Parliament for the City of London, and Lady Barrett, C.H., president of the medical school.

The single toast, after the loyal toasts, was that of the University of London, proposed by the chairman, Miss E. Bolton, M.S., dean of the school, and responded to by the Chancellor of the University. She said that the University of London had been the first to admit women on the same terms as men. They were proud to belong to a university with such a record for justice and fair play.

The Earl of Athlone said there was a strong link between the University of London and the school. The University had no reason to regret having opened its portals to women; in the case of this medical school the wonderful experiment had been most successful. Sir Alan Anderson must be proud that his mother was connected with this work for women. Even if there was still a slight prejudice against women there was no reason to worry, because each day they were gaining position. In the future there should be no difficulty in finding posts for all the women doctors turned out by the school; there was need of them in many places, especially overseas. He was sure that the London School of Medicine for Women would go from strength to strength, and would have the support of the University authorities in their excellent work.

St. Mary's Hospital Medical School

Sir John Simon was the principal speaker at a luncheon given by the dean and staff of St. Mary's Hospital Medical School to the delegates on July 2nd. The luncheon was held in the library of the medical school and about eighty guests were present.

Sir John, proposing the toast of the University, said it was fitting in that great school of medicine to note that a science which devoted itself to prolonging human life was not being called to the bedside of a sinking centenarian, and he congratulated the University on its youth and vigour. In England our academic groves were originally planted far from the busy hives of men, but in the University of London they

had direct contact between a great centre of civic government and the organised pursuit of the higher learning. Their University had been born out of a vision which saw no man shut out from its walls by reason of his poverty or of his religion.

The vice-chancellor, Mr. H. L. Eason, in reply said that a certain quantity of vitamins was essential to health, and the vitamins necessary to the University of London seemed to be the introduction of Scottish lawyers. After referring to its distinguished founders and to Lord Haldane, he paid a tribute to Lord Macmillan, whose zeal had played so large a part in the creation of the new buildings. The medical faculty in the University had always been one of the most important and it had been, and he thought always would be, one of the most distinguished.

Dr. C. M. Wilson said: "In the last resort a nation must have a dream at its core or die." Certainly a university must see visions or lose its hold on the minds of men. Sir John Simon had referred to the vision out of which the London University came to birth. A hundred years had gone and men were still dreaming, planning to fashion the scattered schools of the university into a corporate whole, a little after the fashion of those sister seats of learning which are the act of time. The statecraft of the high officers of the University, of chancellors and vice-chancellors, the ceremonies and respects of the week, the noble pile itself rising up out of the squares of Bloomsbury, all ministered to the feeling that they were members of one body, with one loyalty.

Lady Galway, in giving the toast of the delegates, referred to the different contributions to life, to history, to literature, and to art of all kinds brought by different nations. Each made its own gift, born of its individual outlook on life.

Prof. W. P. C. Zeeman, rector-magnificus of the University of Amsterdam, responded for the delegates.

CORRESPONDENCE

TREATMENT OF PHLEBITIS IN VARICOSE VEINS

To the Editor of THE LANCET

SIR,—Dr. Biegeleisen's letter in your issue of June 27th in reply to my letter of May 2nd draws a red herring across the trail with the introduction of the general topic of lymphœdema. My only object in writing was to maintain the view generally accepted in this country that the majority of cases of phlebitis either clear up spontaneously or under conservative treatment, and do not lead to permanent damage. At the same time I suggested that there were risks in carrying out immediate injection treatment in phlebitis cases as shown by the development of "flare up" reactions, and I also suggested that Dr. Biegeleisen was using the word "phlebitis" in a different sense from the one in which it is usually employed in this country. If, however, Dr. Biegeleisen's argument is that all varicose veins are phlebitic, then I shall not so seriously quarrel with him on the question of therapy.

I certainly agree that œdema in the presence of varicose diseases is due to some complication such as phlebitis, ulceration, or periostitis, whilst the most severe degrees of œdema are associated with so-called deep thrombosis. In all the foregoing, œdema is lymphatic in origin. It is also true that if œdema persists, fibrosis of the tissues occurs. For this reason, subacute or chronic phlebitis demands treatment which will bring about its arrest if this fibrosis is to be avoided. The interval of six months which I propose between an attack of phlebitis and any subsequent injection treatment is certainly an arbitrary one, but it at least ensures that the clinical signs which I associate with phlebitis have long since completely disappeared.

My own experience leads me to believe that, of the large number of cases of phlebitis seen, in only an extremely small percentage does this complication lead to permanent impairment of the limb, but I entirely agree that if the phlebitis passes into a subacute or chronic stage then it must be arrested.

I am, Sir, yours faithfully,

Harley-street, W., July 2nd. REGINALD T. PAYNE.

GOLD IN THE TREATMENT OF INTESTINAL TUBERCULOSIS

To the Editor of THE LANCET

SIR,—At a meeting of the Tuberculosis Association held earlier in the year Dr. James Maxwell suggested that sanocrysin might be tried in the treatment of intestinal tuberculosis, although the dosage should be small. Dr. F. R. G. Heaf expressed surprise at the suggestion, believing gold to be contra-indicated when the intestine is involved. It appears to me that the results of gold treatment depend upon the type of intestinal tuberculosis that is being treated. Most of the gold is excreted through the kidneys or the intestine, and being a heavy metal it is liable to exert toxic effects on these organs. Secondary tuberculosis of the intestine, being a manifestation of Koch's phenomenon, is frankly ulcerative, and I doubt if gold will do any good in this type. The rôle of gold is to stimulate the formation of fibrous tissue, and there is not much reactive fibrosis in the ulcerative type of disease. When ulceration is present, with mucous discharge, gold may irritate the mucous membrane and make the condition worse. Possibly the good results claimed by Dr. Maxwell were due to the fact that his cases were, as pointed out by Dr. L. S. T. Burrell, toxæmic rather than ulcerative. Gold is, I think, worth trying in the primary type of intestinal tuberculosis, and may give satisfactory results from stimulation of fibrous tissue. In India, where bovine infection is practically non-existent and racial immunity has scarcely developed, tubercle spreads sooner or later to the intestines from the lungs. One reason why we do not get results from gold treatment of pulmonary tuberculosis in this country as good as those obtained in western countries, may be due to the fact that the intestinal complication is associated in some degree with the disease in the lungs.

I am, Sir, yours faithfully,

Y. G. SHRIKHANDE.

King Edward VII. Sanatorium, Bhowali, U.P., India.

THE EFFICACY OF VARIOUS SOURCES OF HEAT USED IN TREATMENT

To the Editor of THE LANCET

SIR,—Dr. H. J. Taylor and I have made observations on ourselves on the penetrating power of various sources of heat used in treatment. It must be kept in mind that the circulating blood is actively carrying away heat which is applied to the skin. We have used the mouth temperature as a guide while applying the sources of heat to either cheek, in each case with that amount of energy which was just bearable to the skin. In each case flushing of the skin and sweating were provoked. With hot-

water bottles one against each cheek, and the subject sitting in a room at ordinary temperature, the mouth temperature rose to 99° F. So, too, with two incandescent lamps (300 candle-power), one held on either side of the face. With ordinary diathermy, and the pad electrodes applied one to each cheek, the mouth temperature was raised to 99·2° F. By the high-frequency field (ultra-short waves 6 m.), with the electrodes insulated by glass one on either cheek, the mouth temperature was raised to 101°–102° F. This was local effect for when the electrodes were placed one on each side of the thigh the mouth temperature was not significantly raised.

The Inducto-therm with the flexible cable, through which the current is conducted, wound round the face gave a rise of mouth temperature to 101°–102·6° F. The Inducto-therm is "a vacuum tube oscillator generating an alternating current with a frequency of approximately 12 million cycles per second." The high-frequency current is applied by electromagnetic induction, the "eddy" currents set up in the tissues producing heat.

These observations show the efficacy of the two last methods in heating up, for example, the nasal sinuses, and so relieving sinusitis.

I am, Sir, yours faithfully,

St. John Clinic, July 6th. LEONARD HILL.

PRONTOSIL IN STREPTOCOCCAL INFECTIONS

To the Editor of THE LANCET

SIR,—In view of the fact that, according to recent reports from Germany, there seems to be some risk of toxic reactions associated with the administration of Prontosil (soluble) intravenously, we think it advisable that this preparation should be injected only by the intramuscular route. It is felt that this warning is necessary because, until the indications for prontosil are more exactly defined, this drug is likely to be used in a variety of different conditions. It will further be realised, that as absorption from muscle is rapid with prontosil, it is seldom that any therapeutic advantage is to be gained by giving the drug intravenously.

We are, Sir, yours faithfully,

London, July 7th. BAYER PRODUCTS LTD.

MEDICAL NEWS

University of Cambridge

Dr. E. T. C. Spooner has been appointed an examiner in pathology, hygiene, and preventive medicine for the third examination for the M.B. degree in place of Dr. Raymond Williamson.

During June the title of degree of M.B. was conferred by diploma on H. Drummond Robinson and D. J. Thompson (Newnham), and W. F. Young (Girton).

University of Manchester

At recent examinations the following candidates were successful :—

FINAL EXAMINATION FOR M.B. AND CH.B.

S. G. Abelson, J. C. Brundret, P. J. Burke, J. H. B. Cantley, Caroline J. Chalmers, A. J. F. Crossley, G. D. Dawson, Jacob Goldman, A. H. Gregson, David Halpern, B. P. R. Hartley, Isaac Hesford, James Hilton, A. D. Hoffmann, G. M. Komrower, Evaleen N. A. Milligan, Eleanor M. Mills, E. J. Mitchell, J. L. Morgan, Benjamin Portnoy, D. A. Richmond, E. N. Rowlands, R. M. Shaw, F. W. Smith, Nathan Taylor, D. J. Walker, and G. W. Ward.

Part I. (*Forensic Medicine and Hygiene and Preventive Medicine*).—J. C. Babbage, I. W. Ball, R. E. Ball, T. E. Barlow, G. H. H. Benham, Muriel L. Bennett, Gretel Bergheimer, George Berry, M. J. Blank, Tom Dinsdale, J. H. France, Rosaline Green, Edith A. Greenhalgh, R. S. P. Hawkins, F. G. Hibbert, Thomas Holme, William Ingman, Monica M. Job, T. H. Lawton, Katharine I. Liebert, N. J. de V. Mather, H. N. Osborne, Nydia E. Panton, A. F. Pearson, W. A. Robson, Mary A. Rogerson, R. N. Stansfield, T. S. Stewart, Fred Stratton, Norman Whalley, A. B. White, and J. H. Wilding.

D.P.M.

Part II.—J. A. Hobson.
Part I.—Eleanor B. Schill.

University of Liverpool

At recent examinations the following candidates were successful :—

M.D.

L. G. Anderson, H. M. Cohen, D. A. Levin, and Freda B. Pratt.

FINAL EXAMINATION FOR M.B., CH.B.

Second-class Honours.—Beryl Edgecombe, L. Henry, A. B. Higginson, and W. S. Sutton.

Part III.—O. G. Bark, D. Barton, A. H. Baxter, J. G. Bogle, P. S. Byrne, H. Cantor, Eileen Chrimes, S. E. Cooke, J. B. David, R. E. A. Davies, F. C. Deller, T. M. Doran, Mabel M. Drummond, G. H. Ellidge, Jennet Evans, A. Fairbairn, H. Gewater, A. J. Gill, N. M. Hancox, R. P. Harbord, G. E. Hesketh, E. A. K. Hoppins, Gwenddolen M. Hughes, F. Lanceley, H. R. W. Lunt, K. S. E. MacRae, F. T. Madge, J. V. Manning, G. D. Owen, Kathleen M. Pearson, A. C. T. Vaughan, and T. E. Whitby.

Part I.—H. G. A. Almond, H. Alstead, H. Angelman, C. T. Baynes, Patricia M. Bennett-Jones, A. L. Black, E. J. Bowmer, A. R. Bracey, D. W. Bracey, H. Braslavsky, B. H. Brindle, H. Buckley, Sheila Carmichael, B. Carruthers, W. H. R. Cook, J. W. Crowther, H. Dakin, R. B. Davies, D. J. Doherty, J. Donnelly, Mary W. Gaskell, K. B. Gibson, J. Griffith, W. J. Hay, Anne F. M. Heaney, S. Hen, D. R. Holden, R. S. Holgate, G. O. Hughes, D. A. Hunt, A. L. Hutson, Brenda M. Jones, Iola L. T. Jones, P. Jones, Helen Kay, R. J. Keating, J. C. Kee, J. C. Kitchin, E. Leather, G. L. Manson, J. Mills, J. Moroney, A. Nachmanovitz, S. Newman, E. N. Owen, R. A. C. Owen, J. G. Pritchard, W. Pritchard, D. J. Roberts, G. I. Roberts, R. H. Roberts, G. M. S. Ryan, E. L. Salingar, G. Sanderson, Joyce M. Scholefield, V. K. Summers, G. C. Tweedie, Gwenda Vaughan, Lucy H. E. Walker, R. H. White-Jones, A. R. Whitman, A. H. Williams, C. J. Williams, I. P. Williams, Joan S. Wood, G. Wynne-Griffith, and M. Wynroe.

Part II.—A. M. Abrahams, J. de Bastarrechea, S. Bender, D. Boyars, L. Boyars, W. E. G. Bradford, Sheila Carmichael, E. Claitman, P. Cohen, K. A. Colenso, K. W. Evans, J. G. Fox, Constance M. Frazer, J. Gendle, T. C. Gray, S. Hen, Elsie O. Hughes, H. Hughes, R. R. Hughes, T. S. Jones, G. Karstaedt, J. Kay, J. Lawson, A. T. Leggate, M. Libman, H. K. Lucas, C. McGibbon, G. B. Manning, R. Marcus, Doreen M. Martin, E. H. Moore, W. H. G. Patton, T. H. Rigg, R. S. Riley, W. A. M. Robinson, P. J. Rooney, J. M. Russell, G. H. Shaw, A. C. Smerdon, A. R. Unsworth, Gwenda Vaughan, J. Wajnerowicz, N. Waldman, Evelyn M. Williams, G. E. O. Williams, Margaret E. Williams, and H. Zalin.

D.T.H.

W. Barnetson, D. L. Cran, and R. B. S. Smith.

D.P.H.

E. C. Benn, W. N. M. Mason, T. H. Pierce, F. Pygott, H. R. Shone, Edna L. Smart, H. A. Taylor, Mary M. Thomson, and T. P. Twomey.

The following fellowships and scholarships have been awarded :—

Robert Gee fellowship in human anatomy, Dr. S. G. Griffin; John Rankin fellowship in anatomy, Dr. A. C. Brewer; Holt fellowship in pathology, Dr. A. J. McCall; John W. Garrett international fellowship in bacteriology, Dr. W. M. N. Mason; Thelwall Thomas fellowship in surgical pathology, Dr. A. G. Leigh; Ethel Boyce fellowship in gynæcology, Dr. T. Seager; Samuels Memorial scholarship in medicine, Dr. M. H. Pappworth; and Samuels memorial scholarship in obstetrics and gynæcology, Dr. Helen M. Duvall.

University of Birmingham

At a congregation on July 4th the following degrees and diplomas were conferred :—

Ch.M.—A. L. d'Abreu (with honours) and F. A. R. Stammers.

Ph.D.—J. F. Brailsford.

M.B., Ch.B.—S. D. M. Court, E. J. Goldman, O. S. Hart, J. A. R. Johnson, A. H. M. K. Tabatabai, and H. J. Trenchard (with second-class honours); Margaret E. Adams, L. W. Aldridge, J. S. Brocket, Barbara B. Buckle, P. N. Coleman, Cynthia J. Dudley-Dunn, O. M. Galal, Ann A. Guest, R. V. Jones, G. S. Lester, M. H. Lloyd, C. R. Lowe, Isabel M. Martineau, Edward Mitton, P. J. O'Meara, Nellie M. Plowright, Frances E. Radcliffe, J. H. Shann, Blanche W. Spencer, Ailsa M. L. Whitehouse, Helen M. Wood, and S. R. Wood.

B.D.S.—H. T. Roper-Hall.

D.P.H.—Laura L. Bateman and Elizabeth E. Benson.

The Richard Fenwick Scholarship was awarded to Dr. H. B. Hunt, and the Walter Myers travelling studentship to Dr. C. G. Parsons to undertake research on anæmia in relation to diseases of the cardiovascular system in America.

University of Aberdeen

Prof. David Campbell has been elected dean of the faculty of medicine, and Prof. E. W. H. Cruickshank has been appointed to deliver the John Farquhar lectures in 1936–37.

Queen's University, Belfast

At recent examinations the following candidates were successful :—

M.D.

W. J. Hamilton (with high commendation); W. A. Page (with commendation); F. W. Green, R. G. Kennedy, James Montgomery, L. C. Montgomery, D. C. Porter, and Joseph Reid.

M.B., B.CH., B.A.O.

Muriel J. L. Frazer (first-class honours); Reginald Hall, W. H. Hood, Stanley Millar (second-class honours); William Bamber, J. G. Bell, David Bennett, D. M'C. Black, Francis Boyd, W. M. Brown, Mary Calvert, Stephen Campbell, J. Q. Craig, Robert Dougal, H. J. Duffield, G. S. Eedy, Muriel M. Ferguson, P. E. Fitzpatrick, A. A. H. Gailey, J. C. Groves, C. J. Henry, Elizabeth Holland, W. A. Hopkins, J. H. M'Coy, J. H. M'Laughlin, W. E. M'Phillimy, V. A. Martin, M. M'A. Morrow, J. A. S. Mulligan, A. D. O'Hora, Patrick O'Kane, Enid B. Roulston, J. B. Shaw, S. R. Sinclair, J. C. Summ, Edith E. Thompson, and C. S. Thomson.

Medical Travelling Fellowships

The Medical Research Council announce that they have made the following awards of travelling fellowships for the academic year 1936–37 :—

Fellowships in Medical Science.—Judson Tyndale Chesterman, F.R.C.S. Eng., M.R.C.P. Lond.; and Herbert Edward Holling, M.Sc., M.B. Sheff., M.R.C.P. Lond.

Dorothy Temple Cross research fellowships in tuberculosis.—Alan Leon Jacobs, B.M. Oxon., M.R.C.P. Lond.; Joseph Smart, M.B. Camb.; Brian Connor Thompson, M.D. Camb.; and Vernon Cecil Thompson, M.B. Lond., F.R.C.S. Eng.

The following fellowships have been awarded on the recommendation of the Council :—

Leverhulme fellowship in medical science.—Alan Ruscoe Clarke, M.B. Lond., F.R.C.S. Eng.

Rockefeller fellowship in psychiatry.—Juda Hirsch Quastel, Ph.D. Camb., D.Sc. Lond.

Berlin During the Olympiad

For the convenience of doctors visiting Berlin during the Olympic Games an information bureau has been set up in the Kaiserin Friedrich-Haus, Berlin, N.W.7, Robert Koch-Platz 7, which will give doctors every kind of information before and after as well as during the Games. The office is semi-official and free of charge.

A series of lectures on medical theory and practice in the new Germany will be held at the Kaiserin Friedrich-Haus on August 7th, 12th, and 14th, at 8 P.M. Speakers will include Dr. Wagner, Dr. Bartels, Prof. V. Bergmann, Dr. Blome, Dr. Butenandt, Dr. Conti, Prof. Grote, and Prof. Sauerbruch.

Stockport Infirmary

The governors of this hospital are considering a contributory scheme which provides for free treatment at the infirmary or at any other voluntary hospital in the country, and also at public assistance hospitals in Stockport, Manchester, and Salford for married or unmarried people with dependents whose income does not exceed £6 a week, and single people whose income does not exceed £5 a week. The rate of contribution will be from 1*d.* to 3*d.* a week.

International Conference on Fever Therapy

The first international conference on fever therapy, which was originally to have been held at the end of September, has been postponed, and sessions will be held at the College of Physicians and Surgeons, Columbia University, New York City, from March 30th to April 2nd. A tour has been arranged to take place immediately after the conference, and the following institutions will be visited to observe the techniques in fever therapy employed in the eastern section of the United States: Strong Memorial Hospital of the University of Rochester, New York; the Henry Ford Hospital, Detroit; the Mayo Clinic, Rochester; the Kettering Institute for Medical Research at the Miami Valley Hospital, Dayton; Northwestern University Medical School, Chicago. Further information may be obtained from the general secretary of the congress, Dr. William Bierman, 471, Park-avenue, New York, U.S.A.

Congress of Plastic Surgery

The first European congress of plastic surgery will be held in Brussels at the beginning of October. Further information may be had from Dr. Coelst, 118, Avenue Louise, Brussels.

Conference on Social Work

The third international conference on social work will be held at Bedford College for Women, Regent's Park, London, N.W., from July 12th to 18th. The general subject for discussion is social work and the community. Mr. Alexander Farquharson, Le Play House, 35, Gordon-square, W.C.1, is acting as secretary to the meeting.

New Health Centres at Liverpool

Four new clinics for mothers and children are to be opened in Liverpool. Two are on suburban housing estates, and during the winter it is proposed to arrange lectures for mothers and fathers on subjects concerning their own and their children's welfare.

Winford Orthopædic Hospital

A further sum of £10,000 is required to complete the extensions at this institution, for the £10,000 already promised is to be used for building new wards. Other requirements include £4000 for the nurses' home extensions, £1000 for the isolation block, and £5000 to cover expenditure on roads, drains, electrical installation, and furnishing.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

PADDINGTON MEDICAL SOCIETY.
TUESDAY, July 14th.—9 P.M. (Great Western Royal Hotel, Paddington), Major Stuart Blackmore: Gas!

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, July 17th.—5 P.M. (West London Hospital), Annual General Meeting.

HARVEIAN SOCIETY OF LONDON.
SATURDAY, July 18th.—9.45 A.M. (from Tower Pier), Visit to Royal Docks and Gravesend as Guests of the Port of London Authority.

SOCIETY FOR THE STUDY OF INEBRIETY.
TUESDAY, July 14th.—4 P.M. (11, Chandos-street, W.), Dr. Doris Odlum: Alcohol and Drug Addiction in Relation to Mental Health.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.
THURSDAY, July 18th, FRIDAY, and SATURDAY.—Twenty-second Annual Conference at County Hall, Westminster.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY, July 13th.—2.15 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Mr. V. B. Green-Armytage: Gynæcology and Midwifery in the Tropics.
TUESDAY.—3 P.M., Sir Arthur Hall: Epidemic Encephalitis in England.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2.30 P.M., clinical and pathological conference (surgical).
THURSDAY.—2 P.M., operative obstetrics. 3.30 P.M., Mr. V. B. Green-Armytage: Gynæcology and Midwifery in the Tropics. 5 P.M., Dr. Carroll Birch: Hæmophilia.
FRIDAY.—2.15 P.M., Dr. A. A. Davis: Gynæcological Pathology. 2.30 P.M., Mr. Tudor Edwards: Thoracic Surgery.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics or operations, obstetrical and gynæcological clinics or operations, refresher course.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, July 13th, to SATURDAY, July 18th.—ALL SAINTS' HOSPITAL, Austral-street, S.E. Afternoon and evening course in urology.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY, July 15th.—2 P.M., Dr. Reginald Lightwood: Enlargements of the Liver and Spleen. 3 P.M., Dr. W. W. Payne: Treatment of Diabetes.
Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

PARLIAMENTARY INTELLIGENCE

THE MIDWIVES BILL ON REPORT

IN the House of Commons on July 7th Sir KINGSLEY WOOD, Minister of Health, moved to recommit the Bill in respect of amendments in his name to Clause 1 (Provision of domiciliary service of midwives). During the discussions in committee, he said, it was generally agreed that it would be advisable to have a longer period than the ten days provided in the Bill for the attendance of midwives as maternity nurses after childbirth. The Parliamentary Secretary (Mr. Shakespeare) gave an undertaking to put down an amendment before the report stage to the effect that the period of attendance of the maternity nurse should correspond with the period laid down from time to time by the Central Midwives Board, and approved by the Minister. In accordance with that pledge, and the unanimous view of the committee, he now asked for the recommittal of the Bill in order to make amendments that would ultimately increase the minimum period of attendance by a salaried midwife when acting as a maternity nurse.

In reply to Mr. R. J. DAVIES, who protested against the decision being left to the Central Midwives Board, Sir Kingsley Wood pointed out that under the Midwives Act, 1902, it was laid down as one of the duties of the Central Midwives Board that they should frame rules for regulating, supervising, and restricting within due limits the practice of midwives. Therefore his (Sir Kingsley Wood's) motion must take the form he had mentioned. The House would secure all that they desired, inasmuch as the Central Midwives Board would, in pursuance of their duty, increase the period of attendance to 14 days.

After further debate the motion to recommit the Bill was agreed to by 240 votes to 120 and the amendments down in the name of Sir Kingsley Wood, and referred to in his opening speech, were agreed to.

The Bill passed through the report stage and was read the third time.

PEDESTRIAN SAFETY

In the House of Commons on July 1st Mr. OSWALD LEWIS asked the Minister of Transport if, having regard to the number of accidents resulting in death or injury to pedestrians in our large towns, he would consider the advisability of adopting the American system of compulsory crossings with appropriate penalties for those who neglected to use them.—Mr. HORE-BELISHA said he had considered this question from the point of view of its practicability, but the difficulties in the way of drafting an adequate legal requirement to meet the situation generally could not be ignored. He had asked highway authorities in London to provide guard rails which on appropriate roads would connect the spaces between the crossings in such a way as to impose a physical barrier. The House would be interested to note that despite the absence of compulsion in the use of the crossings, there has been since their establishment a great reduction in pedestrian casualties. The decline this year up to June 20th was 2½ per cent. in the number of pedestrians injured, and nearly 9 per cent. in the number of pedestrians killed. He appealed to all classes of road users invariably to respect the purpose of the crossings.

Sir G. FOX: Does the right hon. gentleman not think that if he had power to compel pedestrians to use these crossings the number of accidents would be materially reduced?—Mr. HORE-BELISHA: I have said that whatever one's intentions may be there are obvious difficulties in framing regulations in effective legal form.

NOTES ON CURRENT TOPICS

Sale of Medicines on Sundays

In the House of Lords on July 2nd, when the Shops (Sunday Trading Restriction) Bill was being considered in committee, the Earl of MUNSTER moved the omission of the First Schedule, which exempts trades and businesses from being closed on Sundays, and moved a new Schedule which enumerated the transactions for the purposes of which a shop may be open for the serving of customers on Sundays. These transactions included the sale of medicines and medical and surgical appliances by any person who has entered into a contract with an insurance committee under the National Health Insurance Acts, 1924 to 1935, for the supply of drugs and appliances.—The new schedule was agreed to, and the Bill passed through committee.

In the House of Lords on July 1st the Public Health (Drainage of Trade Premises) Bill and on July 2nd the Public Health Bill was agreed to on report.

The Public Health (London) Bill

In the House of Lords on July 7th, the Public Health (London) Bill, which consolidates enactments relating to public health in London, was considered in committee on recommitment.

A series of amendments, mostly of a drafting character, was agreed to. In Clause 306 (Interpretation) the phrase "place of safety" was amended to mean any "remand home, workhouse, or police station, or any hospital, surgery, or any other suitable place, the occupier of which is willing temporarily to receive a child."

The Bill passed through committee.

On the same day the Public Health Bill, on the motion of Viscount GAGE, was read the third time and passed.

In the House of Commons on July 7th, the Old Age Pensions Bill and the National Health Insurance Bill were read a second time.

QUESTION TIME

WEDNESDAY, JULY 1ST

Young Persons and National Health Insurance

Mr. SUTCLIFFE asked the Minister of Health, whether the Government proposed to introduce legislation to extend the benefits of national health insurance to young persons on leaving school, in order to close the existing gap between that age and the age of 16.—Sir KINGSLEY WOOD replied: As I stated in the House on Dec. 10th last I hope to introduce legislation at the earliest convenient opportunity to cover the gap in the provision for the medical supervision of boys and girls between the school-leaving age and the age of entry into full insurance under the National Health Insurance Scheme.

Maternity and Child Welfare

Mr. KELLY asked the Minister of Health whether any local authorities, and, if so, how many, delegated part of their maternity and child welfare duties under Section 101 of the Local Government Act to voluntary associations; and whether any, or all, of such authorities provided for contributions to voluntary associations undertaking these duties.—Sir KINGSLEY WOOD replied: Section 101 of the Local Government Act, 1929, does not provide for any delegation of duties but requires the council of every county (except London) and every county borough and, in certain circumstances, other local authorities who have established maternity and child welfare committees, to prepare and submit to the Minister for his approval, before the beginning of each fixed grant period under the Act, a scheme for securing the payment by the council of annual contributions towards the expenses of voluntary associations providing maternity and child welfare services in or for the benefit of their area. Such schemes are at present in operation in the case of 61 county councils, 68 county borough councils, and 34 other local authorities who have established maternity and child welfare committees. As regards the County of London, Section 101 provides for a similar scheme to be made by the Minister after consultation with the local authorities concerned. The scheme at present in operation provides for contributions to be made

to certain voluntary associations by the London County Council and to certain other voluntary associations by 25 metropolitan borough councils.

THURSDAY, JULY 2ND

Unemployment Benefit

Mr. RHYS DAVIES asked the Minister of Labour if he would request the Unemployment Assistance Board to publish in its future annual reports a statement showing the average amount of benefit per recipient in respect of each of its areas.—Mr. ERNEST BROWN replied: I will bring the hon. Member's suggestion to the notice of the Board.

Medical Reports on Prison Dietary

Mr. JOHNSTON asked the Home Secretary whether he would place in the library of this House any evidence furnished him in recent years by prison medical officers showing the improvements in physique and health observable in the prisoners in gaols in England and Wales as a result of the superior dietary in the prisons over the dietary obtainable by the working classes outside the prisons.—Mr. LLOYD, Under Secretary, Home Office, replied: Prison medical officers are not in a position to make any such comparison, and I know of no evidence which is available or could be obtained on the point. It must be remembered that the number of persons received in prison represents only a small fraction of the population, that a large proportion of those received are only detained for short periods, and that if improvement takes place in the health of a prisoner, this may be due to a variety of causes.

Special Schools for the Deaf

Mr. VIANT asked the President of the Board of Education whether he had considered the representations from a number of education authorities expressing the view that the compulsory age for the entry of children to special schools for the deaf should be altered from seven years to five years of age; and if he was prepared to adopt this proposal.—Mr. OLIVER STANLEY replied: I have received representations on this subject from a number of local education authorities. As stated in my answer of May 21st last, I am prepared to consider the introduction of legislation for this purpose if I am assured that such legislation would be entirely uncontroversial and would have the full support of the local education authorities and of the organised bodies concerned.

Overcrowding at Liverpool Mental Hospital

Mr. LOGAN asked the Minister of Health if his attention had been drawn to a document issued by the Liverpool city council calling attention to the overcrowded state of the mental unit at the Smithdown-road Hospital, Liverpool; and what action, if any, he intended to take to end this congestion.—Sir KINGSLEY WOOD replied: I am aware of the facts to which the hon. Member refers. The overcrowding at this institution is due to the general shortage of mental hospital accommodation in the area served by the Lancashire Mental Hospitals Board. Schemes are already in progress for the provision of additional accommodation, which should relieve this congestion.

Third-party and Workmen's Compensation Insurance

Sir PERCY HURD asked the President of the Board of Trade what progress was being made with the inquiry into third-party and workmen's compensation insurances; and when the report might be expected.—Mr. RUNCIMAN replied: I understand that the Committee on Compulsory Insurance expect shortly to conclude the hearing of the evidence, but I am not in a position to say when they are likely to report.

MONDAY, JULY 6TH

Supply of Milk During School Holidays

Mr. HEPWORTH asked the President of the Board of Education whether, in conjunction with the British Milk Marketing Board, it was intended to operate in the school holidays any system of supplying school children with their daily milk at a cheap rate; and, if so, where this system would be introduced.—Mr. OLIVER STANLEY replied: It is expressly provided in the Milk in Schools Scheme that it may operate throughout the holidays, and arrangements for the supply of free milk during the holidays are in operation in a number of areas. There are a few arrangements, at Plymouth and elsewhere, for the provision of milk on payment during the holidays. I should welcome the extension of such arrangements, and I am considering with the Minister of Agriculture possible means of surmounting the practical difficulties involved.

Rating of Shops in Hospitals

Mr. RHYS DAVIES asked the Minister of Health whether his attention had been drawn to the privileged position of shops inside hospitals, clinics, and within the precincts of railway stations in respect of rating; and whether he proposed to inform the rating authorities that such premises should be rated separately and on a basis which would be in keeping with the burden of assessment on ordinary trading premises.—Sir KINGSLEY WOOD replied: My attention had not previously been drawn to this question as regards shops in hospitals and clinics. As regards shops in railway stations, the House of Lords recently held, on a series of test appeals, that the premises under appeal were not railway hereditaments and should be rated separately, and effect will doubtless be given to the principles enunciated in those decisions in the assessment of such premises. Under the law governing the valuation of properties other than railway hereditaments the question of separate assessment is one for determination on the facts of each case by the Assessment Committee concerned. I have no power to give directions in the matter.

TUESDAY, JULY 7TH

Health Services in Scotland

Mr. WESTWOOD asked the Secretary of State for Scotland whether he was aware that the departmental committee on Scottish health services had reported that 6 per cent. of the children medically examined in the schools of Scotland were reported as suffering from insufficient nutrition; and what steps he proposed to take in the matter.—Sir GODFREY COLLINS replied: The report of the Committee on Scottish Health Services state that in 1933–34 the nutrition of school-children was "below average" in 5·3 per cent. and "very bad" in 0·19 per cent. The report makes it clear, however, that malnutrition is not in all cases due primarily to underfeeding but may arise from other conditions such as disease, injudicious feeding, lack of fresh air, sleep, &c. All these children are kept under close observation by school medical officers and steps are taken to secure appropriate treatment. In many areas free meals are provided at school, and milk is supplied to school-children at reduced rates. The possibility of extending these facilities to other areas is constantly under review.

Appointments

ARNSBY, K. D., M.B. Lond., D.P.H., has been appointed Woman Assistant Maternity and Child Welfare Medical Officer for Derbyshire.

BENNETT-JONES, M. J., Ch.M. Liverp., F.R.C.S. Eng., Visiting Surgeon to the Whiston Public Assistance Institution, near Preston.

DAVIDSON, W. G., M.B. Aberd., D.O.M.S., Hon. Ophthalmic Officer at the Grimsby and District Hospital.

EVERDELL, E. T., M.B. Durh., B.Hyg., D.P.H., Assistant School Medical Officer for Newcastle-upon-Tyne.

FERGUSON, M. M., M.B. Manch., Resident Surgical Officer at the Christie Hospital and Holt Radium Institute, Manchester.

FRANKLIN, A. W., M.B., M.R.C.P. Lond., Assistant Physician to the Children's Department of St. Bartholomew's Hospital, London.

HAWKSLEY, J. C., M.D., M.R.C.P. Lond., Hon. Physician to the Connaught Hospital, Walthamstow.

HOSFORD, J. P., M.S. Lond., F.R.C.S. Eng., Assistant Surgeon to St. Bartholomew's Hospital, London.

JEFFERISS, F. J. G., M.R.C.S. Eng., Resident Assistant Medical Officer at the Kingston and District Hospital.

KEOGH, C. A., M.B. Belf., F.R.C.S. Eng., Assistant Surgeon to the Ear, Nose, and Throat Department of the London Hospital.

LEWIS, J. T. R., M.D. Lond., D.P.H., Assistant Medical Officer of Health and School Medical Officer for Heston and Isleworth.

LOVELOCK-JONES, W. D., M.B. Wales, D.P.H., Senior Resident Surgical Officer at Llandough Hospital.
MARTIN, W. M., M.D. Glasg., D.P.H., D.C.O.G., Visiting Obstetrician to Moorlands Infirmary, Rawtenstall.
MILLER, A. K., M.R.C.P. Lond., Medical Superintendent of Crossley Sanatorium, Delamere.
MITCHELL, EVELYN, M.B. Edin., Resident Assistant Medical Officer at the Epsom County Hospital.
MORISON, A. G., M.D. Aberd., D.P.H., Medical Officer of Health for Wembley.
MYERS, G. A., M.B. N.Z., Resident Surgical Officer at Ancoats Hospital, Manchester.
RUSSELL, A. S. DILL, M.B. Lond., Hon. Anæsthetist to the Grosvenor Hospital for Women, London.
SHAW, M. E., D.M. Oxon., F.R.C.P. Lond., Consulting Physician to St. John's Hospital, Twickenham.
SMITHSON, R. G., M.B. Leeds, Resident Medical Officer at St. Luke's Hospital, Huddersfield.
TALBOT, G. G., M.B. N.Z., F.R.C.S. Eng., Hon. Ophthalmic Surgeon to the East Ham Memorial Hospital.
WARD, ERIC, M.R.C.S. Eng., D.P.H., Assistant Medical Officer of Health and Assistant Tuberculosis Officer for Oldham.
YATES, IRENE, M.D., M.R.C.P. Lond., D.P.M., Psychiatrist to the Queen's Hospital for Children, Hackney.

Certifying Surgeons under the Factory and Workshop Acts: Dr. J. P. BANNERMAN (Haddington District, East Lothian); and Dr. G. F. MAGURRAN (Exeter District, Devon).

Vacancies

For further information refer to the advertisement columns

Aberdeen City (Fever) Hospital.—Jun. Res. M.O., £100.
Albert Dock Hospital, Connaught-road, E.—Res. M.O., at rate of £110.
Association of Surgeons of Great Britain and Ireland, 65, Portland-place, W.—Moynihan Fellowship. £350.
Barry Urban District.—Deputy M.O.H., &c., £500.
Bedford County Hospital.—Second H.S., at rate of £155.
Birkenhead Municipal Hospital.—Deputy Med. Supt., £450.
Birmingham and Midland Hospital for Women.—H.S., at rate of £100.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.P., at rate of £120. Also Hon. Surg. and Hon. Surg. to Ear, Nose, and Throat Dept.
Bradford, New Royal Infirmary.—Two H.S.'s, each £135.
Brighton, Royal Sussex County Hospital.—Cas. H.S., £120.
Brighton, Sussex Eye Hospital, Eastern-road.—H.S., at rate of £150.
Bristol City and County.—Deputy M.O.H. and Deputy Part M.O., £800.
Bristol, Cossham Memorial Hospital.—Jun. Res. M.O., at rate of £100.
Bristol, Ham Green Hospital and Sanatorium.—Jun. Asst. Res. M.O., £250.
British Homœopathic Association, 43, Russell-square, W.C.—Leopold Salzer Prize, £100.
Bucks County Education Committee.—Dental Surgeon. £500.
Cambridge University.—Asst. Directorship of Research in Medicine, £700. Ale Elmore Medical Research Studentships, each £300.
Canterbury, Kent and Canterbury Hospital.—H.S., at rate of £125.
Chelmsford and Essex Hospital.—H.P., at rate of £150.
Chesterfield and North Derbyshire Royal Hospital.—H.S. to Ophth. and Ear, Nose and Throat Depts., at rate of £150.
Colonial Medical Service.—M.O.'s.
Derbyshire Royal Infirmary.—Gynæcological H.S. and Emergency Anæsthetist, £150.
Doncaster Royal Infirmary and Dispensary.—H.S. to Eye and Ear, Nose and Throat Depts., £175.
Eastbourne, Princess Alice Hospital.—Res. H.S., £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O., also H.P., at rate of £200 and £150 respectively.
Edgware, Redhill County Hospital.—Jun. Asst. M.O., at rate of £250.
Folkestone, Royal Victoria Hospital.—Jun. Res. M.O., at rate of £120.
Gloucestershire Royal Infirmary.—H.S., at rate of £150.
Great Yarmouth General Hospital.—H.S., at rate of £140.
Grimsby and District Hospital.—Sen. and Jun. H.S.'s, £200 and £150 respectively. Also H.P., £150.
Halifax Royal Infirmary.—Third H.S., at rate of £150.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—H.P. Also Cas. Surg. O. for Out-patient Dept., each at rate of £100.
Harrogate and District General Hospital.—H.P. and Cas. O., at rate of £150.
Harrogate Royal Bath Hospital.—Res. M.O., £156.
Hastings, Royal East Sussex Hospital.—Jun. H.S., at rate of £150.
Herefordshire General Hospital.—H.P., H.S., and Cas. O., each £100.
Hertford County Hospital.—H.P., at rate of £150.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. Surgeon.
Hull Royal Infirmary.—Second Cas. O., at rate of £150.
Kent Education Committee.—Dental Surgeon, £500.
Kettering and District General Hospital.—Second Res. M.O., at rate of £125.
Kidderminster and District General Hospital.—Sen. and Jun. H.S.'s, £150 and £100 respectively.
Leeds University.—Part-time Lecturer in Physiology and Hygiene, at rate of £400.
Leicester Royal Infirmary.—Locum Tenens H.P., £5 5s. per week.
Lincoln, The Lawn.—Asst. M.O., £300.
Liverpool and District Hospital for Diseases of the Heart.—H.P., £100.
Liverpool Royal Infirmary.—Gynæcological Reg. £120. Also Sen. Cas. O., at rate of £120.
London University, S.W.—Graham Scholarship in Pathology, £300.
Maidstone, Kent, County Ophthalmic and Aural Hospital.—H.S., at rate of £200.
Manchester, Ancoats Hospital.—H.S., at rate of £100.
Manchester, Hulme Dispensary, Dale-street.—Res. M.O., £250.
Manchester, Northern Hospital.—Res. Surg. O., £150. Also Res. H.P. and H.S., each at rate of £100.
Manchester Royal Children's Hospital, Pendlebury.—Res. M.O. and Res. H.S., at rate of £125 and £100 respectively. Asst. Surgeon and Asst. Surgeon to Ear, Nose, and Throat Dept., each £50. Also Asst. Physician, £40.
Manchester Royal Infirmary.—Senior H.S., and Res. Cas. O., each at rate of £150.
Manchester, St. John's Hospital of Manchester and Salford for the Ear.—Asst. Surgeon.
Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Radiologist, 100 guineas.
Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsthetist, £100.
Middlesex Colony for Mental Defectives, Harper-lane, Shenley.—Second Asst. M.O., £460.
Mount Vernon Hospital, Northwood.—H.S., £150.
Newcastle-upon-Tyne Hospital for Sick Children.—Res. Surg. O., £250. Also H.P. and H.S., each at rate of £100.
Newcastle-upon-Tyne City Hospital for Infectious Diseases.—Res. Med. Asst., £350.
North Middlesex County Hospital, Edmonton.—Asst. M.O., at rate of £350.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—Three H.S.'s, each at rate of £200.
Poplar Hospital for Accidents, East India Dock-road, E.—Hon. Gynæcologist.
Portsmouth Royal Hospital.—H.S., at rate of £130.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S., at rate of £120–£150.
Queen Mary's Hospital for the East End, Stratford, E.—Two Cas. and Out-patient Officers. Each at rate of £150.
Reading, Royal Berkshire Hospital.—H.S. to Specials Dept., at rate of £125.
Rochdale, Birch Hill Hospital.—Jun. Res. M.O., at rate of £225.
Rochdale Infirmary and Dispensary.—H.P., £150.
Royal Air Force Medical Service.—Commissions.
Royal Cancer Hospital, Fulham-road, S.W.—H.S. to Radium Dept., at rate of £100.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Hon. Asst. Surgeon.
St. Bartholomew's Hospital, E.C.—Cas. Physician, £145.
St. George's Home, Milman's-street, Chelsea, S.W.—Visiting M.O., £200.
St. Mary's Hospital, W.—Cas. H.S., at rate of £100.
Sheffield Radium Centre.—Locum Tenens M.O., at rate of £400.
Southampton, Royal South Hants and Southampton Hospital.—H.S. to Ear, Nose, and Throat Dept. and Res. Anæsthetist, at rate of £150.
South Eastern Hospital for Children, Sydenham, S.E.—Res. M.O., at rate of £100.
Southend General Hospital.—H.S., at rate of £100.
South London Hospital for Women, Clapham Common, S.W.—Clin. Assts. for Surgical Out-patients.
Stockport Infirmary.—Res. Surg. O., £250. Also H.S., £150.
Stoke-on-Trent Longton Hospital.—H.S., £160.
Sudan Medical Service.—Stack Medical Research Laboratories, Bacteriologist, £E.720.
Surrey County Council.—Two Asst. M.O.'s, each £600.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Jun. Asst. Res. M.O., £300.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S., each at rate of £100.
Walsall General Hospital.—Hon. Gynæcological Surgeon. Also H.S., at rate of £150.
West London Hospital, Hammersmith-road, W.—Hon. Asst. Anæsthetist.
Westminster Hospital, Broad Sanctuary, S.W.—Clin. Asst. to Varicose Veins Clinic.
Westmorland County Hospital, Kendal.—H.S., at rate of £200.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Dental Surgeon. Also Part-time Clin. Pathologist, at rate of £300.
Wolverhampton Royal Hospital.—H.S., at rate of £100.
Woolwich and District War Memorial Hospital, Shooter's-hill, S.E.—Hon. Asst. Physician.
Worksop, Victoria Hospital.—Jun. Res., at rate of £120.

The Chief Inspector of Factories announces a vacancy for a certifying factory surgeon at Langport, Somerset.

SALTAIRE HOSPITAL, SHIPLEY.—The governors of this hospital have accumulated a reserve fund of £10,000 with which they were hoping to erect a new hospital; but they have been informed by the Charity Commissioners that this money cannot be used for such a purpose. The existing building is now out of date, having been erected 68 years ago. The reserve fund can be used in the maintenance of a new hospital, but funds for its building and even for land will have to be collected.

NOTES, COMMENTS, AND ABSTRACTS

THE CANADIAN ESKIMO

Dr. I. M. Rabinowitch, of Montreal, has carried out a series of clinical observations[1] on Canadian Eskimos in the Eastern Arctic. His primary object in doing so was to investigate the alleged absence among them of diabetes, cancer, and arterio-sclerosis, and to inquire whether there was any connexion between the absence of these diseases and the dietetic habits of the people. More than half of the 389 Eskimos examined lived in four islands, Baffin, Southampton, Devon, and Ellesmere. Not wishing to winter in the Arctic, he was not able to spend much time in any one place, but, even so, his observations are interesting, if in no sense conclusive.

HEALTH AND HABITS

By occupation Eskimos are hunters and trappers. The natural food of the hunter is generally seal, walrus, whale, and birds; that of the trapper, caribou, dried buffalo and, occasionally, seal. According as hunting is good or bad, this natural fare is eked out to a greater or less extent with flour. On the whole, the men were found to be healthier than the women, the hunters healthier than the trappers, and the shore-dwellers healthier than those living inland near the tents. Eskimos in contact with civilisation tend to be pale, whereas those in the remoter places are often plethoric and, indeed, polycythæmic. Among the latter, epistaxis is common and venesection is practised. In Hudson's Bay and Straits, tuberculosis is not rare; at Chesterfield Inlet, eight cases of active pulmonary tuberculosis were found in adults and four cases of tuberculous adenitis in children. At Port Burwell there were five cases of pulmonary tuberculosis, two of tuberculous adenitis, one case of tuberculous phalanx, and one of tuberculous knee-joint. No tuberculosis, however, was found at Clyde River, at Pond Inlet and Dundas Harbour on Devon Island, nor at Craig Harbour on Ellesmere Island. Among the Eskimos in contact with civilisation, teeth were cleaner, owing to the use of tooth-brushes, though not healthier than in the remoter districts further north. At Chesterfield and Port Burwell caries and pyorrhœa were rife. Among the women, consequent upon the practice of leather-softening by chewing twisted skins, teeth become abraded and worn down to the gum-line. The men suffer hardly at all in this way since they confine their chewing activities to dog lines only.

ARTERIO-SCLEROSIS—CANCER—DIABETES

Plenty of arterio-sclerosis, confirmed by X rays, was found among the Eskimos of the Bay and Straits. Of 75 specimens of urine examined, half of which came from "civilised" and half from "native" subjects, nine contained albumin; eight of these were from the Bay and Straits. The ætiology of this arterio-sclerosis was obscure. It was certainly not due to lues, diabetes mellitus, nor lead poisoning. Nor was it due to high protein intake, for the "native" Eskimo consumes far more meat than his more "civilised" and arterio-sclerotic brother. Isolated examples of various diseases were encountered. There was one case of pituitary disease with exophthalmos, one of rheumatoid arthritis, and one, in a child, of hydrocephalus. There were four cases of cataract, one of epilepsy, and one of insanity, but except for an isolated apical systolic murmur heard at Dundas Harbour, there were no cases of heart disease nor, remarkably enough, of tonsillar sepsis. As to cancer, only one case, a doubtful carcinoma of lip, was seen by Dr. Rabinowitch. There were no secondary glands and the patient was not a pipe-smoker. We are not told the ages of the Eskimos he examined and in the absence of this and other information it is hardly possible to accept without further evidence his conclusion that "cancer must be extremely rare in the Eastern Arctic." No diabetes mellitus whatsoever was found. Relative absence of carbohydrate in the dietary may to some extent be the answer here since, even when food is abundant, the Eskimo consumes only 30–40 grammes of carbohydrate daily in the form of flour, blueberries, and the glycogenous contents of the stomach of the caribou and walrus, and the skin of the whale and narwhal. Syphilis also appears to be and is rare; active gonorrhœa rarer still. The Eskimos are reputed to be a fairly sterile race. From such small investigations as Dr. Rabinowitch was able to undertake, he formed the impression that they were no more sterile than other peoples. He attended a primipara in labour. The confinement was normal and the cord, ligatured in two places with a piece of dogline, was cut by one of the eleven women present. Parasitic infection was common but rickets rare or non-existent despite the paucity of ultra-violet light, possibly because of delayed weaning and the high vitamin-D content of the seal-oil in the mothers' dietary. Various, and often serious, ophthalmic conditions were noted. The Eskimo's eye seems to be relatively insensitive to the presence of foreign bodies, possibly due, at any rate in the Bay and Straits, to lack of vitamin A, the result of a dietary deficient in fats. The Eskimo is not a clean feeder, but is remarkably free from infection though the flora of his throat and respiratory tract resembles that of persons living elsewhere. The assumption is that organisms endemic to the Eastern Arctic lack virulence, for he succumbs readily enough to infection introduced ab extra.

RACIAL SURVIVAL

Dr. Rabinowitch goes carefully into the question whether the Eskimos are disappearing. It is true that, in addition to their reputed sterility, they have small families and a high infant mortality and that, where there is contact with civilisation, the race is degenerating. But among the native stocks, population is increasing. By eliminating misfits and certain diseases, of which diabetes may be an example, they have become a healthy race and in-breeding, since it favours the reappearance of desirable as well as undesirable recessive traits, has done them no harm. For the imperialistic reason, if for no other, the Eskimo should be kept alive, and to this end he must be protected from the more deleterious effects of civilisation. Dr. Rabinowitch puts forward several tentative suggestions for the preservation of a vigorous Eskimo stock. There should be periodic eye examinations and a method of softening leather less harmful than chewing must be discovered. The spread of venereal disease must be checked by disciplinary action against ship's crews and respiratory infections must be avoided by a more rigid system of examination of passengers landing from ships and mixing with the Eskimos. Moreover there should be more prophylaxis by means of sera and vaccines against epidemic diseases, and an abundance of raw meat in the dietary must be ensured. The Eskimo should be encouraged to live a tent-life rather than a hut-life and taught to move his tents at frequent intervals. For the dog, so indispensable in the life of the Eskimo, there should be an abundant supply of walrus which is the best food for him.

[1] Canad. Med. Assoc. Jour., May, 1936, p. 487.

HOSPITAL ALMONING AS A CAREER

THE demand for trained hospital almoners exceeds the supply and according to those best qualified to judge[1] is likely to do so for some time. The number at present in training is only 122, approximately the same as in 1932, when, owing to the financial crisis, posts were not easy to obtain. But whereas the

[1] The Institute of Hospital Almoners (Incorporated) Report for the year 1935. Tavistock House (North), Tavistock-square, London, W.C.1.

number of posts filled in that year was only 33, of which 16 were new, the number filled in 1935 was 88, including 57 new posts. Nearly half of these were made by public authorities—the London, Middlesex, and Surrey county councils, the Liverpool and Leeds corporations, the Croydon public health department, and the Sheffield city council. This development of an important ancillary service is of interest not only to medical men attached to hospitals, but to those in private practice—e.g., in preventing patients who could properly afford a private doctor from attending hospital except for consultation and in securing for those patients sent to hospitals by their doctors expert help in implementing the advice they receive there. Parents or friends of well-educated girls seeking a career will rejoice at the opportunity to recommend one which satisfies the desire to give social service without the sacrifices of personal freedom entailed by entry into the nursing profession under present conditions. The almoner may live where she will, so long as it is within reasonable distance of her work, and she is free after office hours and at the week-ends; and the opportunities she gets of helping people to cope with those family, psychological, and economic difficulties which are more disheartening even than physical illness provide rich rewards for her efforts. The course of training normally takes three years, two years in working for a social study diploma or certificate at one of 12 centres, 3 of which are in London; during this course four months are spent in family case work, two at least being under the London Charity Organisation Society. The prospective almoner then does a year's practical work in a hospital under the guidance of a certificated almoner. Candidates with a university degree are accepted for a course whose length varies from 15 months to 2 years with the nature of their previous training.

It is appropriate that this year's report of the Institute of Hospital Almoners should open with a tribute by Sir Farquhar Buzzard to Miss A. E. Cummins, whose pioneer work was recalled in THE LANCET at the time of her death in February last.[1] A bursary fund is being raised in her memory to enable some students to train as almoners who could not otherwise afford to do so. An appreciation of her work also takes first place in the annual report for 1935 of the Samaritan Fund and work of the Lady Almoner's department of St. Thomas's Hospital where she started in 1905 work which expanded every year until her retirement in 1924 and has since developed still further on the same lines. The special problems dealt with in the various departments of the hospital are described with illustrative detail, the account of the speech clinic, the Lydia outpatient department (for venereal disease), and the St. Thomas's fathers' and mothers' centre being specially illuminating. It is perhaps unfortunate that in one place the record of a patient's enthusiasm for St. Thomas's is allowed to imply a relative dissatisfaction with conditions elsewhere. Those contemplating an almoning course but uncertain of the scope of the work should read this report of the work at St. Thomas's which is the mother of other centres, as well as that of the Institute.

AN INVESTIGATION INTO PERIODIC PARALYSIS

PERIODIC paralysis is a rare disease and the clinical and pathological study reported by Guillain and his colleagues[2] is founded on a single case, which was, moreover, unusual in many respects. The attacks of weakness, which were of gradual development, lasted for periods varying from 2 to 25 days. No provocative causes were noted. The paralysis was always flaccid with loss of the tendon reflexes. It advanced in the most severe attacks to complete loss of all voluntary movements except those of the eyes, of the face, of the tongue, and of the pharynx. No sphincter decontrol or impairment of sensibility were observed. Of the many clinical observations made during and in the intervals between attacks, significantly abnormal results were found only in the electrocardiogram, which showed a much extended and flattened T wave; in the electrical reactions, which gave exaggerated galvanotonus in all the affected muscles; and in the cerebro-spinal fluid in which during the attacks there were an increase of protein (0·35 per cent.) and positive Pandy and colloidal benzoin reactions. The investigators conclude—after discussing the various possibilities—that although the site of the changes responsible for the weakness of voluntary movements is outside the central nervous system, there is insufficient evidence to indicate whether it is the peripheral neurone or the muscle itself that is at fault. They have considered at length the different hypotheses previously advanced to account for the condition and find good reason for rejecting all save that of recurrent intoxication from some undetermined endogenous source. To test the hypothesis of toxæmia they injected into the carotid artery of the guinea-pig blood which had been withdrawn from their patient shortly before, during, and after an attack of paralysis. From the result of this experiment they conclude that the patient's serum contained elements that were highly toxic for the guinea-pig; these elements were thermolabile and were therefore probably not produced by changes in the inorganic constituents; on one occasion they were in greatest concentration immediately before the onset of paralysis, and they were still present so long as any weakness remained. It is suggested that the changes in the cerebro-spinal fluid result from invasion of the subarachnoid space by these toxins.

EUGENIC PROBLEMS SIMPLIFIED

THE Eugenics Society has just published two small pamphlets by its general secretary, Dr. C. P. Blacker. One entitled "The Future of our Population" (6*d*.) deals with the present trends of the birth- and death-rates and their effect on population. Are the experts unduly pessimistic about these effects? Dr. Blacker thinks not; in his view these are ample grounds for disquiet. The great increase in the population of this country which occurred last century was almost entirely due to a fall in the death-rate; the birth-rate remaining almost stationary until about 1880 when it also began to fall (Dr. Blacker suggests largely owing to the wider use of contraceptives). Since then both rates have been falling steadily, but the birth-rate has fallen more steeply than the death-rate. There is a good chart illustrating these facts graphically, and it is obvious that whereas at one time the graphs for birth- and death-rates were diverging (with the former greater than the latter and therefore indicating a rapidly increasing population), for the last fifty years they have gradually approached each other, with a consequent slowing up of population increase. The death-rate cannot fall indefinitely; in fact the time is at hand when it must start rising, since the proportion of old persons in the country is steadily increasing, and after all man is mortal. Within the next decade, so the statisticians tell us, the lines will cross and begin diverging in the opposite direction, with a resultant fall in population; and provided the present trends persist, which surely is improbable, the population of this country in a hundred years from now would be reduced to something between four and five million. Dr. Blacker defines and discusses the "net reproduction-rate" (N.R.R.) which expresses the ratio of the number of women in one generation to that of the number of women of reproductive age in the previous generation and which probably gives the best available index of the future size of a population. If the N.R.R. is unity, then the population will tend to be stationary, if below unity the population will decrease, if above it will tend to

[1] THE LANCET, 1936, i., 442.

[2] Guillain, G., Rouquès, L., and Dumas, C. R.: Ann. de méd., 1936, xxxix., 265.

increase. The average size of family required to produce a N.R.R. of one appears to be four.

The second pamphlet, "Sex Education for Children" (3*d*.), simply and clearly expounds the facts of sex development and reproduction in a way which should be of real help to parents wise enough to wish to answer their children's questions truthfully. The author, perhaps deliberately, avoids discussing sexual ethics, though it is probable that many parents would have been grateful for some concrete advice on this vexed subject.

A GYMNASIUM HANDBOOK

SCHOOLS and institutions will welcome a practical handbook issued [1] by the Board of Education on the planning, spacing, ventilation, and lighting of gymnasia, with constructional details of apparatus. The ideal to be aimed at is a full equipment, but suggestions are offered as to choice where apparatus can only be bought gradually. Gymnasia in special colleges have for many years been constructed on the principles contained in the handbook, but the emphasis on cloakroom and douche accommodation will be very welcome to those teachers struggling to obtain authorisation to re-equip the older provincial schools where douching is still often considered unnecessary and even, for girls, unladylike. Here they have sanction and encouragement from a central authority, and the whole arrangement of the book emphasises the hygienic aspect.

HINTS TO MOTHERS

BEING both a mother and an ex-medical officer of health, Dr. Churchill is doubly qualified to write On Being a Mother.[2] Reproduction, love, maternity, motherhood, dietetics, the choice of a doctor and of a school are some of the important matters considered. "It is the mother's task to keep a watching brief on her child's health and progress without letting either the child or the rest of the world realise that she is giving it this amount of care." Benevolent detachment is the ideal to be aimed at, an ideal neatly summarised by Sidney Howard in "The Silver Cord" as "Have 'em, love 'em, and leave 'em be." Among many other interesting observations, Dr. Churchill points out that the feet of dancers are often flat yet function perfectly. She would advise no treatment for flat-foot unless it is attended with pain or disability. Homosexuality and masturbation are frankly and sanely discussed in the chapter on adolescence. Dr. Churchill thinks that tonsils and adenoids are often needlessly removed, and that there is something to be said for unorthodox methods of treatment such as osteopathy and auto-suggestion. She is critical of the public-school system. There are excellent chapters on nursing the sick child and on the mother in middle life. Even grandmothers are not forgotten. The book is written with knowledge, insight, and for the most part with humour, but there is a lapse where the page of diagrams of occlusive pessaries is headed "Love and the modern woman." A bibliography is appended.

COUÉ

AN intimate study of Coué by an admirer who was in close contact with his hero has reached us.[3] Mr. Orton is certainly a Boswell in as far as the amiable little apothecary of Nancy lives again in these pages. Coué was not, of course, a great psychologist, but he was a remarkable man, human, lovable, and undoubtedly sincere. A follower of Liébeault, he carried out the hypnotic theories of the greater thinker and must claim the origin of laws of auto-suggestion which do not, however, explain the processes he used. Prestige was all in all to Coué's practice. A critical atmosphere ruined his effects, as observers of his English visit may remember in painful retrospect.

Of the relationship of auto-suggestion to psycho-analytic theory he knew and cared nothing. In fact he was not a little afraid of the more fundamental doctrines of Freud. Yet he claimed successes in neurasthenia and obsessional neurosis. No doubt he affected dramatic cures and no doubt many of these relapsed. But his admirers and beneficiaries will long remember the little figure with closed eyes and clasped hands proving that the imagination is stronger than the will.

[1] Memo on the Planning, Construction, and Equipment of Gymnasia in all Types of Schools and Educational Institutions. Board of Education: Physical Training Series No. 14. 1*s*.

[2] On Being a Mother. By Stella Churchill, M.R.C.S., L.R.C.P., D.P.H. Cantab., formerly Assistant M.O.H. for Maternity and Child Welfare in Bermondsey and St. Pancras. London: Victor Gollancz Ltd. 1936. Pp. 285. 7*s*. 6*d*.

[3] Emile Coué. The Man and his Work. By J. Louis Orton. London: Francis Mott Co., Ltd. Pp. 306. 8*s*. 6*d*.

Births, Marriages, and Deaths

BIRTHS

BULLEID.—On July 1st, the wife of Dr. Arthur Hilary Bulleid, Midsomer Norton, Somerset, of a son.

BULLEN.—On June 26th, at Nairobi, the wife of Dr. Walter A. Bullen, of a daughter.

BURSTAL.—On July 2nd, at Riverhead, Kent, the wife of Dr. E. Worsley Burstal, of a daughter.

DODD.—On June 28th, the wife of Dr. T. A. Dodd, of Christchurch, Hampshire, of a son.

FLETCHER-BARRETT.—On June 18th, at Ranikhet, India, the wife of Major K. Fletcher-Barrett, F.R.C.S. Eng., of a son.

KENNEDY.—On June 25th, at Bentinck-street, W., the wife of Capt. A. F. Kennedy, R.A.M.C., of a daughter.

KINGSLEY.—On June 28th, the wife of Dr. A. P. Kingsley, of Burton Latimer, Northants, of a son.

LINDECK.—On July 4th, the wife of Dr. E. W. Lindeck, of Brighton, of a daughter.

MACDONALD.—On June 30th, at Nuneaton, the wife of Dr. George A. Macdonald, of a son.

WATSON.—On July 2nd, the wife of Dr. Hubert Watson, of Salisbury, of a daughter.

WILLIAMS.—On July 2nd, at Welbeck-street, W., the wife of Dr. D. O. Williams, Horsham, of a daughter.

MARRIAGES

FORSYTH—JONES.—On June 27th, at St. Columba's Church, London, Surg. Lt.-Comdr. Archibald Newlands Forsyth, M.B., Ch.B., to Dorothy Gwendoline (Toni), elder daughter of Mr. Frederick Jones, of Durban.

KEMPTHORNE—WHITFORD.—On July 2nd, quietly, at St. Peter's Church, Piccadilly, by the Reverend Clarence May, Dr. Renatus Kempthorne, late resident medical officer, University College Hospital, London, and Miss Katharine Margaret Anderson Whitford.

MARKBY—OGLE.—On July 1st, at St. Mary's Church, East Ilsley, Claude Edward Puckle Markby, F.R.C.S. Eng., to Magdalen, elder daughter of the Rev. and Mrs. Arthur Ogle, East Ilsley Rectory, Berks.

TISDALL—OGILVIE.—On July 3rd, at Epsom, Surrey, Gerald Ernest Harding Tisdall, M.B., B.Chir., to Marjorie Evelyn, eldest daughter of the late Mr. Charles E. Ogilvie and Mrs. Ogilvie.

WIRTH—DEBONO.—On July 4th, at Malta, Edgar Wirth, M.D., of Colchester, Essex, to Dolores, third daughter of the late Prof. George Debono, M.A., M.D., and Mrs. Debono, of Valetta.

GOLDEN WEDDING

MASON—ROBERTS.—On June 30th, 1886, at Grafham, Hunts, by the Rev. B. H. Puckle and the Rev. Canon Linton, John Mason, M.D., to Amy Isabella Roberts.

DEATHS

DE NYSSEN.—On July 4th, at Halesworth, Petrus Johannes de Nyssen, M.R.C.S. Eng.

DHINGRA.—On July 2nd, at Fitzjohn's-avenue, N.W., Bebari Lal Dhingra, Kt., C.I.E., M.D. Brux., Prime Minister, Jind State, Punjab.

INGLIS.—On July 5th, at Lismore, Ayr, Anthony Inglis, M.D. Glasg.

KING.—On July 2nd, at Sudbury, Suffolk, Herbert Dove King, M.A., M.D. Edin., J.P., aged 84.

LAWRENCE.—On June 26th, Thomas William Pelham Lawrence, M.B. Lond., F.R.C.S. Eng., late Pathologist of University College Hospital, London.

MCDOWALL.—On July 4th, at Wadhurst, Sussex, Thomas William McDowall, M.D. Edin., aged 91.

NEVIN.—On June 30th, at Ballycastle, co. Antrim, Robert Nevin, M.B., B.Ch. R.U.I., for 30 years medical practitioner in Burton-on-Trent.

SEPHTON.—On July 2nd, at Culcheth, near Warrington, Richard Burrows Sephton, L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg., J.P., aged 65.

SPROULLE.—On July 6th, at Mirfield, Thomas Wetherall Sproulle, L.R.C.P.I., aged 74.

SUNDERLAND.—On July 2nd, at Chelmsford, Essex, Oliver Sunderland, M.R.C.S., L.R.C.P., who formerly practised at Bexley Heath, Kent, aged 82.

THWAITES.—On June 28th, Henry Thwaites, M.R.C.S. Eng., of Wimbledon, and late of Redhill.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.